

COAL AGE

Volume 14

New York, December 19, 1918

Number 25

[Members of fighting regiments from the United States who came from the anthracite coal regions were overjoyed at the news that they were shortly to be returned to private life and their former occupations.—NEWS ITEM.]

Back to the Mines!

Written expressly for COAL AGE

BY RUFUS T. STROHM

The fightin's done an' the last big shell's
Gone screamin' acrost the hill,
An' but for the doughboy's joyful yells
The world 'ud be mighty still;
The boche is groggy, believe me, bo,
An' he's tickled to quit, be gee!
There's nothin' doin' out here, an' so
It's back to the mines for me!

I've dug my last six feet of trench
An' I've throwed away my spade,
An' I give my shoulder an orful wrench
When I heaved my last grenade.
I kin can this twaddle of "parley-voo"
An' cut out the fool "wee, wee,"
For now that there ain't no job to do
It's back to the mines for me!

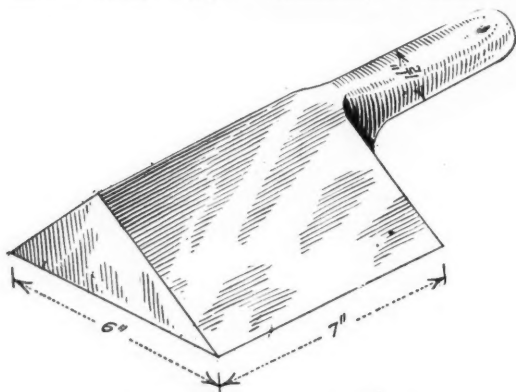
No more I'll stan' on the firin' step
A-waitin' to draw a sight
On some poor Fritzie that ain't got hep
To the way us Yankees fight;
An' my score'll stop where it is just now,
At a measly twenty-three;
The sport's called off, an' I reckon how
It's back to the mines for me!

There ain't no sense in my loafin' round
Eatin' three square meals a day,
When there's tons of coal hidin' underground
An' the winter's on the way;
So I kinda think that I'll hit the trail
For the lan' of the brave an' free,
An' grab my pick an' my ol' tin pail—
It's back to the mines for me!

IDEAS AND SUGGESTIONS

Simple Car Chock

A type of car chock not mentioned in the article on chocks in *Coal Age* of Nov. 28, p. 973, is shown in the accompanying illustration. This chock, which is used mostly at shaft bottoms and similar places, is triangular in cross-section, 5 to 6 in. wide and about 2½ in. thick. One end is formed into a handhold, or handle. This



EASILY MADE CAR CHOCK

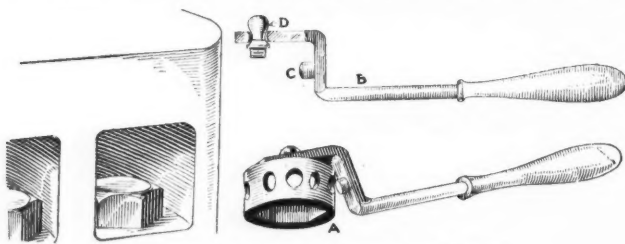
chock may be shaped easily with an ax and serves its purpose admirably. In use it is ordinarily placed in front of the second wheel of the car, as in this position it has less tendency to push the car sidewise or off the track. It may be easily knocked from its place either by the foot, by a sharp blow from another chock or from a heavy stick.

Ratchet Wrench for Close Quarters

BY A. J. LUCAS

Ozone Park, N. Y.

The repairman in and about the mine is often confronted with the task of loosening or taking up nuts located in such narrow openings as shown in the accompanying illustration; it is almost inaccessible with a wrench of any ordinary type. To overcome this dif-



DETAILS OF A RATCHET WRENCH

ficulty I made the ratchet wrench shown to the right in the illustration. The hexagon part A of the wrench is made by forging a piece of suitable steel pipe around the nut and drilling holes on its circumference. The handle B is provided with a pin C, which fits the holes in the wrench body. It is fastened to the upper part of the wrench by means of the formed pin D. The operation of this wrench is self-explanatory.

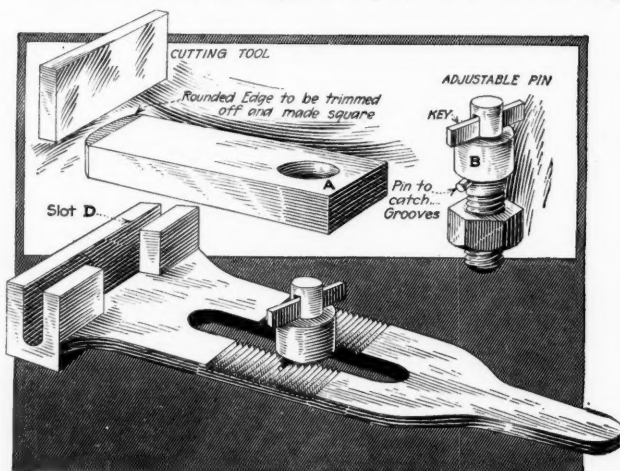
Squaring Crusher Hammer Ends

BY J. W. BAILEY

St. Louis, Mo.

L. W. Tabor, machine shop foreman at the coke plant of the Laclede Gas Light Co., of St. Louis, reports that he was confronted with a troublesome proposition in the shape of keeping the steel hammers of the coal crushers sharp and square edged. He solved his difficulty in the manner here described.

These hammers when new are about 14 in. long, 6 in. wide and 1 in. in thickness, and number considerably over 100 to a set. Use wears the ends round and of little service, making it necessary to trim the worn ends quite often. One set trimmed in the ordinary way by the shop blacksmith required several days' time, considerable coke and an additional blacksmith to attend to the regular requirements of the shop.



DEVICE USED TO KEEP HAMMERS IN CONDITION

To eliminate the excessive use of coke and conserve on fuel in heating the hammers, Mr. Tabor devised a gas furnace that would heat just enough of the ends to be practical and accommodate six hammers at one time.

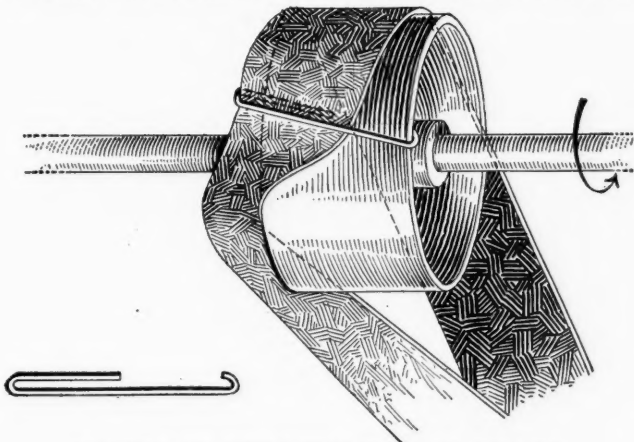
Then he constructed the device shown in the accompanying illustration, which facilitated the work and enabled the blacksmith to finish an entire set in a few hours. This in turn eliminated the hire of an extra man in times when men are scarce.

This jig measures about 36 in. over all. The pin B is set on a grooved surface so as to gage the proper length. The hammer when heated is placed with the hole A over the pin B. The key is then placed in the pin B to hold the hammer firm. The cutting tool is then set in the slot D over the rounded and heated portion of the hammer, and a steam hammer is brought to bear on the cutting tool, finishing the operation. This device insures a perfect edge on all hammers as well as uniform lengths. About a quarter of an inch is taken off at each trimming.

Putting on Heavy Belts

The accompanying illustration shows a simple device for putting on heavy belts when it is necessary to shut down in order to do so, and where a rope is usually employed for the purpose.

Take a piece of a $\frac{5}{16}$ or $\frac{3}{8}$ in. round iron and bend it as shown in the small sketch. Hook the short end over



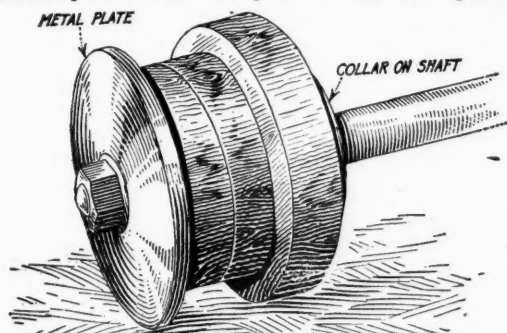
METHOD OF REPLACING BELT ON PULLEY

the edge of the rim of the pulley and the long end under the belt, as indicated. Start the engine slowly, and when the belt is on it is not necessary to stop, as is the case when a rope is used, because the short end of the hook will always straighten out and disengage itself. It is a good plan to use a bar of as light iron as will answer the purpose, since it will straighten out and free itself with less stress on the belt.

Emergency Pump Repair

BY S. D. HAINLEY
Osceola Mills, Penn.

One Saturday morning, on going to an electrically driven pump that handled the water from an important section of the mine, I found that the machine was not working properly. The water at this time was already above the rails, so that the section could not be operated that day. Taking the pump apart, it was found that the metal portion of the piston had been practically



HOW PUMP REPAIR WAS MADE

eaten up by the acid of the water. A new piston and a piston rod were at once ordered. These were promised to arrive on the following Monday morning.

Monday morning came, but no piston arrived. Tuesday and Wednesday rolled around, and still no piston. All this time the water was rising. Something had to

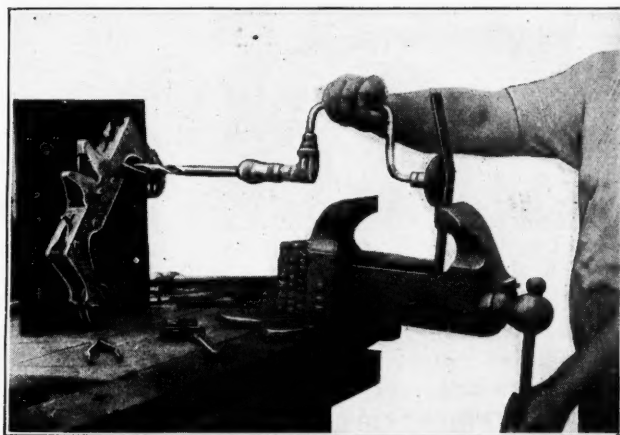
be done, or at least attempted. Accordingly I got a piece of 2-in. oak plank and sawed out a circular section $\frac{1}{4}$ in. less in diameter than the bore of the pump cylinder. The edge of this was then cut away to a depth sufficient to take $\frac{3}{8}$ -in. packing and for a length of 1 in. A piece of 1-in. oak board was now procured, sawed to this same diameter and attached to the piece of 2-in. plank.

As the available length on the piston stem or rod was not sufficient to accommodate another 1-in. piece, a metal plate was used. This was made slightly smaller than the bore of the pump and was held in place by the regular piston nut.

When this improvised piston was fitted with packing and put in place it gave as good satisfaction as had the regular piston. In fact, this device gave excellent service until the acid ate up the iron plate and permitted the packing to come off. When I asked the superintendent to have another plate made he immediately suggested that I make a wooden one!

Drilling with the Vise

The rig shown in the accompanying illustration will often solve difficult problems, such as drilling large holes in metal, when a drilling machine is not available. Such circumstances often arise in connection with the work



METHOD OF DRILLING WITH THE VISE

of the repairman. A ratchet brace is used for the movement of the drill, while the feed is obtained by means of the vise, which is equipped in the manner shown. An angle-plate or any suitable object can be employed for the proper location and backing for the piece to be drilled.

The relatives and friends of men imprisoned in a mine in case of an explosion or other accident are most vitally concerned in the recovery work and the public in general is much interested in the probable loss of life and the efforts made for promptly exploring the mine in order to rescue the living and to recover the dead. A local official of the mine should be designated by the manager or the superintendent to take charge of an information bureau in a building somewhat removed from the mine entrance. This official from time to time should give out, for the benefit of the entombed men's families and the public, definite information concerning the progress of the rescue and recovery work.—*Rescue and Recovery Operations in Mines.*

Plant of the Williams Pocahontas Coal Co.

By GEORGE S. JAXON
Philadelphia, Penn.

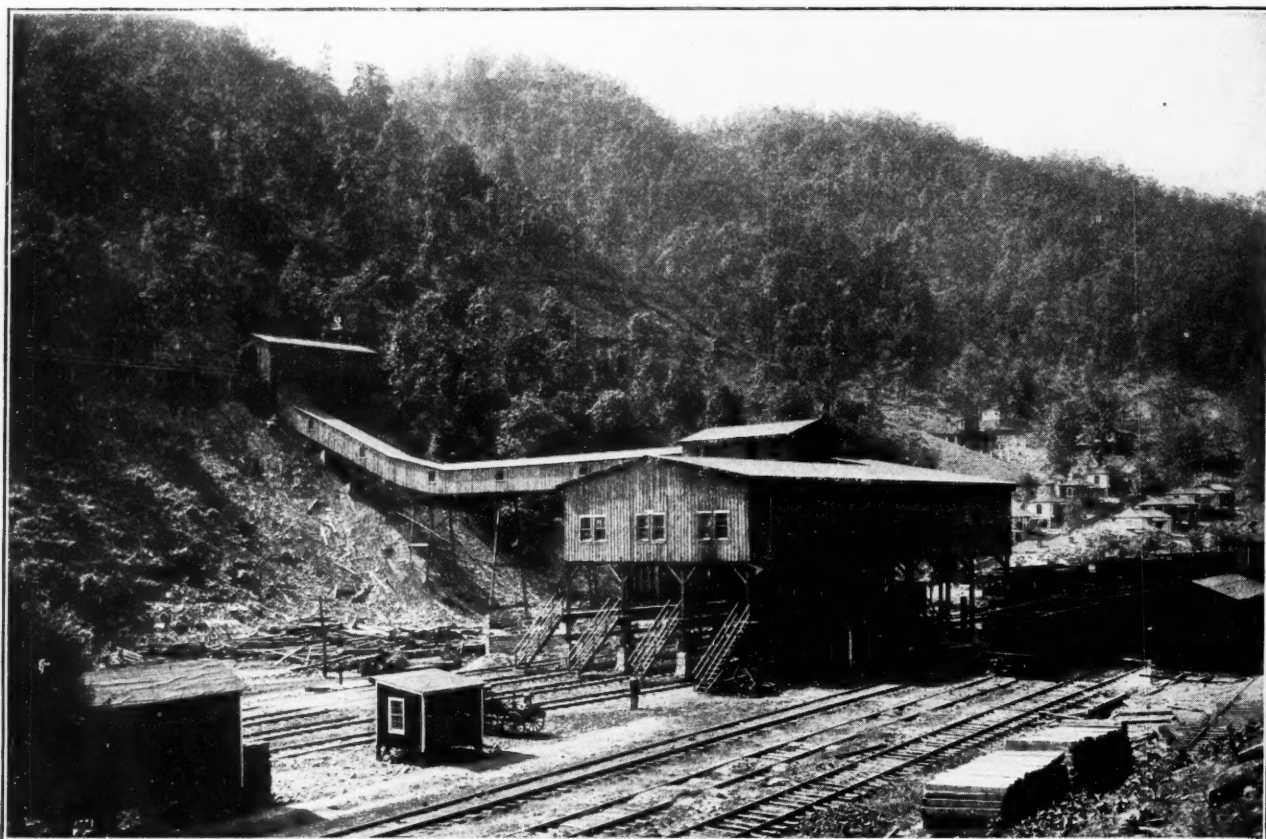


FIG. 1. GENERAL OUTSIDE VIEW OF THE WILLIAMS POCAHONTAS COAL CO.'S PLANT

THE present-day demands that the entire output of a coal mine be properly cleaned and sized in order to conform to the exacting requirements of its customers brings to the attention of the industry certain sizing plants which are worthy of mention. One of these is the modern wood-construction coal tiple of the Williams Pocahontas Coal Co., at War, McDowell County, West Virginia, on the Dry Fork branch of the Norfolk & Western R. R. The operation is known as the Howard mine and is comparatively young, having started shipping coal in May, 1916. The workings are in the "War Creek seam," which varies in thickness from 66 to 72 inches. A general outside view of the plant is shown in Fig. 1.

At the commencement of mining operations, coal from the working face was brought out in mine cars constructed of wood. From these it was dumped into an inclined wood storage chute, built on practically the same slope as that of the mountain profile. At the lower end of this chute gates were installed for drawing out quantities of coal and depositing them in a mine car which was drawn back and forth over a wooden trestle by a mule, and delivered to a dump hopper over the railroad car, which was located at approximately 160 ft. from the discharge gates of the storage hopper.

This crude method of loading straight run-of-mine coal, as shown in Fig. 2, in no way satisfied the officers of the coal company. The result was that around Christ-

mas, 1916, designs for a new modern equipment were being considered. In March, 1917, Frank W. Truscott, the president of the company, signed a contract for a sizing and cleaning plant of such proportions as to properly handle a capacity of 150 tons of run-of-mine coal per hour, and prepare it in four different sizes, the three larger of which would be hand-picked. The different grades were based upon the following percentages: Lump, 25 per cent.; egg, 18 per cent.; nut, 17 per cent.; slack, 40 per cent. Total, 100 per cent.

The system of mining followed at this operation is that known as the "wall-and-pillar." Electrical mining machines are employed. The following is an illustrated description of the equipment that was chosen as the one being the most suitable to fulfill the requirements.

A trip of mine cars which are of about two tons capacity each are hauled by electric motor and spotted adjacent to the scalehouse. The cars are then cut loose from the motor and one at a time delivered to a Phillips crossover dump, after each car has been properly weighed on a platform scale. The dump empties each car as received into a substantial wood-frame hopper of about five tons capacity. This is lined with $\frac{3}{8}$ -in. steel plates, the lining being held in place by means of countersunk bolts.

Attached to the bottom of this hopper is a reciprocating plate feeder which delivers the coal in a measured quantity to the trough of the lower strand of a re-

tarding conveyor. The crank of this feeder is so designed that the stroke may be easily and quickly changed to suit the capacity requirements. This feeder receives its mechanical power through spur gearing and chain drives from the take-up shaft of the conveyor.

The retarding conveyor here employed without question has been carefully designed and built for heavy service. Its speed of travel is 80 ft. per minute and it has an entire length of 255 ft. from center of head sprocket to center of tail sprocket. Of this length, 105 ft. is on an incline of 20 deg., while the remainder at the discharge end is horizontal. The inclined and horizontal sections are connected with a 75-ft. radius curve. This machine is employed for transporting the coal from the feeder to the shaking screens. The flights are made of $\frac{1}{2}$ -in. steel plates and measure 10 in. deep by 30 in. long. They are rigidly attached at intervals of 36 in. to a double strand of 18 in. pitch-steel strap-bushed roller chain. The side bars of this chain are constructed of $2\frac{1}{2}$ x $\frac{3}{4}$ -in. flats, the joints being $\frac{3}{4}$ -in. riveted steel pins provided with bushings and encircled with $3\frac{1}{4}$ -in. straight-face solid cast-iron rollers, which travel on both the carrying and return runs along steel bar trackage secured to the wooden frame by means of countersunk bolts.

At the lower end of the conveyor a large rack-and-pinion discharge gate is introduced for the purpose of permitting the discharge of run-of-mine coal direct to a 36-in. picking table 20 ft. long from center to center of sprockets. The coal is cleaned on this table prior to delivery to the railroad cars, but this

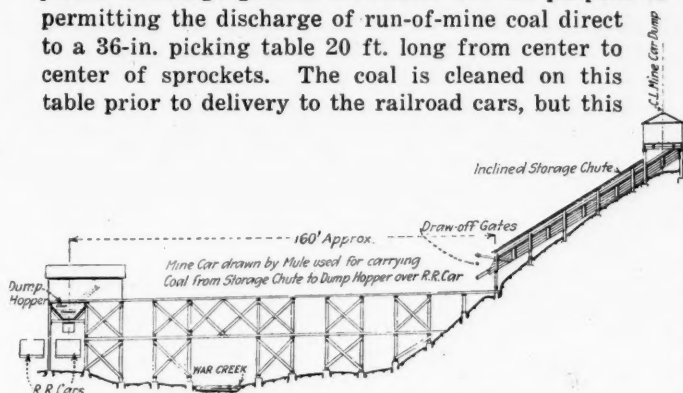


FIG. 2. CRUDE METHOD OF LOADING RUN-OF-MINE COAL

part of the equipment is only used in case of emergency when, for some reason, portions of the tippie equipment may be out of commission.

Fig. 3 shows the emergency run-of-mine table and the pickers at work. This table is constructed of $\frac{3}{8}$ -in. steel pans of 9-in. pitch attached to a double strand of roller chain which travels at a speed of 50 ft. per minute. The extreme lower end of the retarding conveyor is the



FIG. 3. VIEW OF PICKERS AT WORK ON EMERGENCY RUN-OF-MINE TABLE

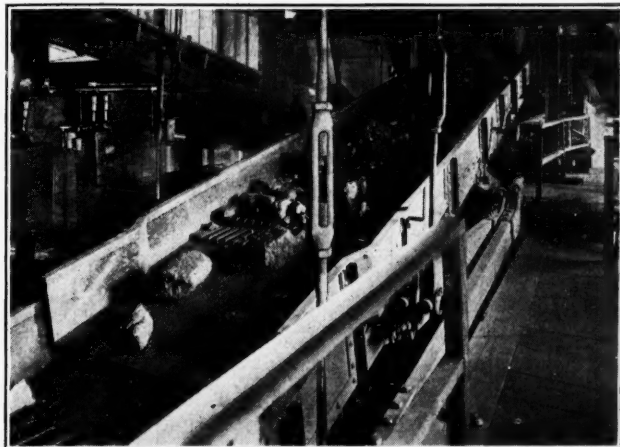


FIG. 4. VIEW OF THE SHAKER SCREENS

regular discharge point, where the coal is delivered without drop onto a steel chute which in turn delivers it to the sizing shaking screens.

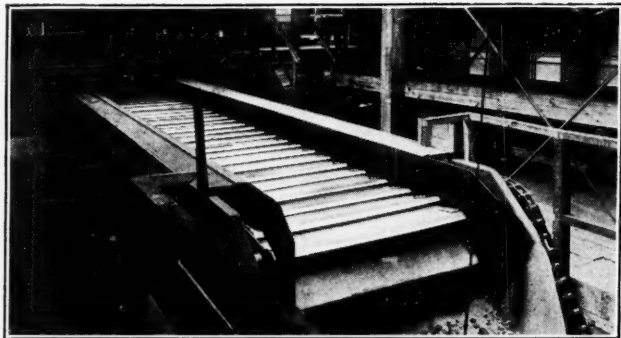
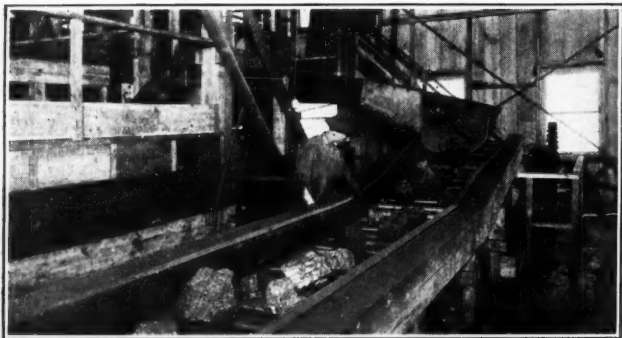
The screening unit is composed of an upper and a lower screen, both being of the hanger-rod type. Each screen has a width of 60 in. and a length of approximately 25 ft. Each is moved back and forth at a speed of 100 shakes per minute.

The upper screen is utilized for separating slack and nut coal from the lump and egg, this separation being accomplished by means of slotted lip screen plates. This screen is so designed that the slack is delivered to the slack hopper directly below, while the nut coal may be delivered to the nut coal picking table, or by means of a fly valve in the lower deck of the screen it may be delivered and mixed with the slack in the hopper mentioned above.

The lower screen is equipped with the same type of slotted lip screen plates as mentioned above and also bar screens, and is used for removing or separating the egg size from the lump. The slotted lip screen plate is used when preparing 4-in. egg, and the bar screen when preparing 8-in. egg, the latter size being known as 8-in. run-of-mine. A veil plate is used for covering the 8-in. bar screen when this size of product is not being prepared.

These screens are shown in Fig. 4 and are operated by means of an eccentric shaft of ample proportions to oscillate them easily at the speed mentioned. They are connected to this shaft by ball-and-socket eccentric rods, which insure perfect alignment in operation. A successful shaking screen unit depends largely upon being carefully balanced. In the designing of these screens considerable study was given to attain this end.

The cleaning operation of the three sizes of coal—lump, egg and nut—is carried on in the following manner: Each size is automatically discharged onto a slow-moving overlapping corrugated apron picking table. The lump table shown in Fig. 5 is 36 in. wide and 66 ft. long, but has 30 ft. of its length mounted within a structural steel boom, for the purpose of delivering the lump coal without breakage to the railroad cars. The apron is constructed of a continuous section of $\frac{3}{8}$ -in. steel pans, or flights, mounted on a double strand of 9 in. pitch steel roller chain with $\frac{3}{4}$ -in. steel riveted pins at the joints. Rollers of $3\frac{1}{4}$ in. diameter encircle a case-hardened steel bushing, which in turn encircles the



FIGS. 5 AND 6. VIEWS OF LUMP, EGG AND NUT PICKING TABLES

joint pins. This table travels on flat steel bar track mounted on wooden framework along the horizontal picking section.

The egg and nut tables, as shown in Fig. 6, are similar to each other and are 48 in. wide and 32 ft. long each from center of head sprockets to center of foot sprockets. Both of these tables are horizontal and are constructed of the same kind of chain as that employed in the lump table, the only difference being that the steel corrugated flights have greater width to accommodate the smaller sizes of coal, which demand a thinner layer on the table for picking purposes.

These tables have no loading booms attached directly to them, but at the head end a discharge chute is introduced for the purpose of receiving the coal and delivering it to a special Link-Belt loading boom chute. The discharge chutes are provided with flygates made of perforated metal, the intention of these being to rescreen the coal as it is discharged from the picking table and so take out the fines which have been unavoidably made by the pickers on the table. These are de-

posited in the cross mixing conveyor, which is located directly below. By lifting the perforated-metal hinged flygates in these chutes all coal passing over the picking tables may be delivered to the cross conveyor for mixing purposes, or to the domestic coal bin as the case may demand.

Fig. 7 shows all three loading booms quite clearly. The lump boom being part of the lump table, as before mentioned, needs no explanation. It will be noticed that the booms which are utilized for egg and nut are of a distinct and separate type from those usually seen and are an entirely new feature in loading-boom design. These booms have proved themselves successful and have been used to good advantage in several other operations. They are of the drag scraper type and are constructed of a single strand of malleable iron H class chain, the carrying or top strand of which travels on the inside of a $\frac{3}{16}$ -in. steel trough, with flared sides to prevent the crowding of coal en route, the chain and trough being supported on main channel members.

These units are each 27 ft. centers of head and foot

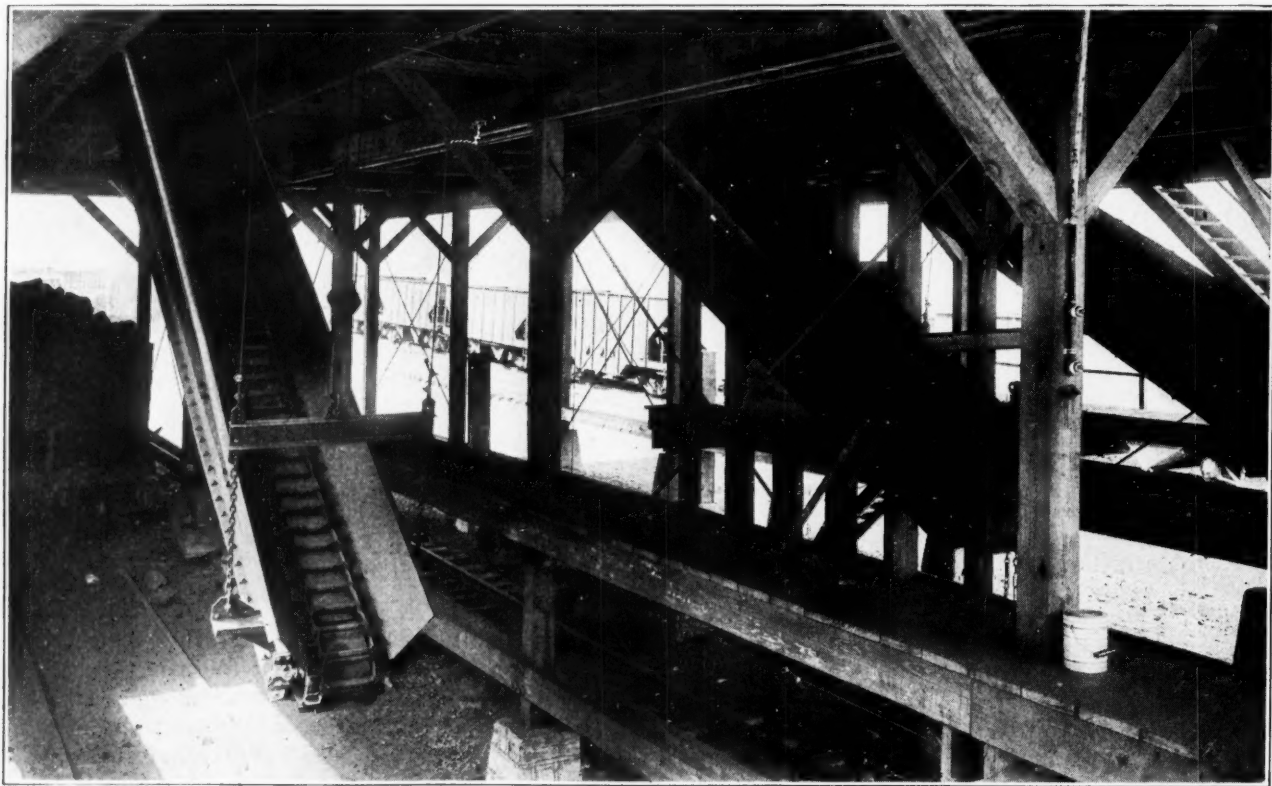


FIG. 7. INTERIOR VIEW OF TIPPLE, SHOWING THE THREE LOADING BOOMS IN USE AT PLANT

sprockets and hinged at the upper or foot end, where they receive the coal from the picking-table discharge chutes. The lower, or return, strand runs back on angle guides and is protected along the bottom by means of a plain steel plate which insures no obstructions to encounter the obstacles on the railroad cars, such as brake wheels, etc.

The booms are counterbalanced by means of steel ropes and cast-iron counterweights, while the raising and lowering is performed by means of a simple friction hoist. These hoists are located above the driving ends of the picking tables and are operated by means of a line shaft upon which are mounted paper friction pinions which supply the power for hoisting. By the easy

upper strand performs the duty of carrying the above-mentioned hand-picked lumps. This machine is constructed of 6-in. pitch, double-strand, steel-strap, link chain with crossbars at 24-in. intervals. The chain travels in a $\frac{3}{16}$ -in. steel trough upon a steel bar wearing track, the trough being equipped with a rack and pinion valve over the auxiliary slack bin for the purpose of discharging the fine coal rescreenings from the tables. The valve has three positions: No. 1, wide open to discharge fine screenings; No. 2, a perforated section which takes out fine coal when conveying domestic coal, which insures the delivery of clean egg and nut to the domestic bin; No. 3, a plain blank section which closes up the valve opening and makes a continuous trough when conveying refuse to the rock bin.

The entire plant is operated by means of three-phase, 60-cycle, 440-volt alternating-current motors manufactured by the General Electric Co. These are complete with starting compensators, circuit breakers, no-voltage release and overload relays. One 75-hp. motor is used for driving the reciprocating feeder, retarding conveyor, shaking screens, emergency run-of-mine picking table and cross mixing conveyor, while a 15-hp. motor is employed for driving the lump, egg and nut picking tables, along with the loading booms and friction hoists. All driving gears and parts are properly protected with

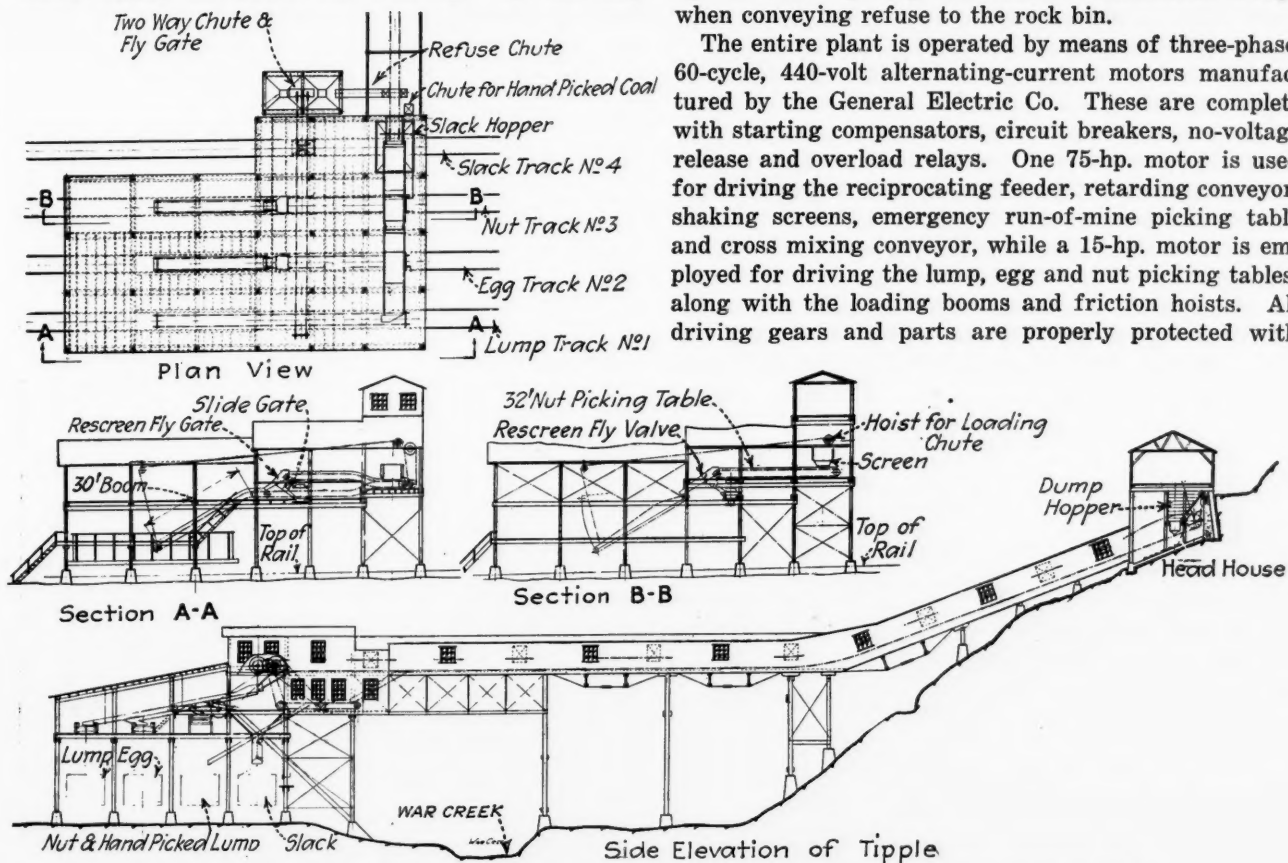


FIG. 8. DETAILS OF EQUIPMENT IN USE AT WILLIAMS POCAHONTAS COAL CO.'S PLANT

manipulation of a hand lever the operator may either raise or lower the booms at will. This type of friction hoist has given excellent results at several other operations and has undoubtedly been a big step in the direction of simplicity in design of hoisting mechanism for use with loading booms.

The cross mixing conveyor it utilized for several purposes: First, for delivering the fine coal screenings from the picking tables to an auxiliary slack bin located adjacent to the slack railroad track; second, for delivering egg and nut coal to a domestic bin; third, for delivering refuse from the picking tables to the rock bin; fourth, for conveying hand-picked lumps from the egg table to the lump table.

This conveyor is so designed so as to receive in its lower strand from the discharge chutes at the end of the picking tables the following: Egg and nut for the domestic coal bin, the rescreenings from the picking tables and the refuse for the refuse or rock bin, while the

steel-plate guards and all walkways and stairs are provided with double wooden hand railings.

The tipple building is of longleaf yellow pine construction, properly dressed and thoroughly and substantially braced with steel rods. Considerable thought was given to the lighting and ventilating of this building, the result being that an abundance of windows and skylights are introduced to enable the thorough cleaning of the coal. Fig. 8 shows a general outline drawing of the entire equipment. "Car retarders" are used to facilitate the moving and spotting of railroad cars under the tipple building. Throughout the entire plant it is evident that considerable thought and study have been exercised in even the smallest details, mechanical devices having been properly installed to avoid unnecessary labor in the performance of sizing, cleaning and loading operations. The entire equipment was designed, fabricated and erected complete by the Link-Belt Co., of Philadelphia, Chicago and Indianapolis.

Conservation of Explosives*

By S. C. JONES

Greensburg, Penn.

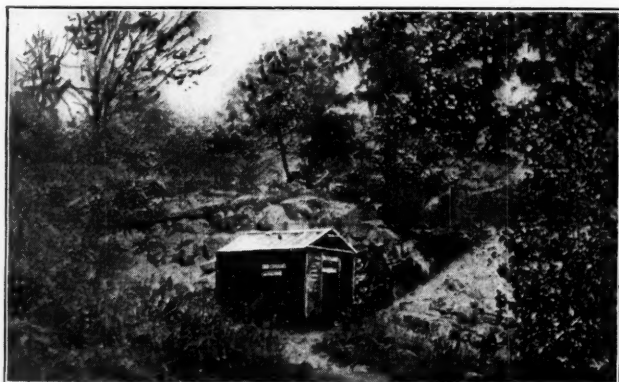
SYNOPSIS — *Much powder and other explosives are destroyed or rendered useless annually through careless or improper storage. The proper placing of the hole in the face and the proper loading and tamping of the charge have much to do with the effectiveness of the shot or the amount of coal brought down per pound of explosive employed.*

ABNORMAL conditions have existed both inside and outside the mines during the time this nation has played such an important part in the world war now drawing to a close. During this period extreme methods have been applied, the prime object in view being to attain maximum production. Slowly but surely a reaction has set in, and changed conditions must inevitably be faced. Explosives being my specialty, I will try to explain briefly some matters that may help

been wasted because they were stored in mines for long periods and subjected to dampness. Another plan followed in many places was for the men to take their explosives home and store them in some outbuilding or in the cellar. Here again they were exposed to dampness and poor storage conditions.

The law mentioned above has brought about an entire change. It stipulates that all explosives must be stored safely, protected from theft and handled only by responsible persons. It has been my unpleasant duty to destroy tons and tons of explosives rendered unfit for use through bad storage and improper handling. Storage conditions have been and still are bad in many places, and this has caused and still is causing much waste.

Not long ago I visited a plant where the explosives are stored in an underground magazine, the floor of which is 8 ft. below the surface, with no visible means of drainage or ventilation. I also visited another place that was in such a dilapidated condition that one could



FIGS. 1 AND 2. TYPES OF POWDER MAGAZINES THAT LEAVE MUCH ROOM FOR IMPROVEMENT

to eliminate unnecessary waste and aid in the conservation of explosive materials.

There can be little question that both miners and shotfirers have been, and still are, using excessive amounts of explosives in blasting coal. If this is doubted, let a comparison be made between the present and past cost of explosives per ton of coal mined.

Conditions brought about by the war were responsible for the enactment of the present explosive law in the State of Pennsylvania. This law not only lays down certain regulations, and prescribes who shall handle and dispose of explosives, but it has proved to be the means of conserving and saving explosives, as well as promoting certain safety features.

Under the old regime every little store that wished to do so could handle explosives. Miners bought in any quantity, and of any kind, from 20 per cent. to 60 per cent. dynamite, and from the lowest to the highest grade of permissibles. They took these into the mines without regulation. Tons and tons of these explosives have

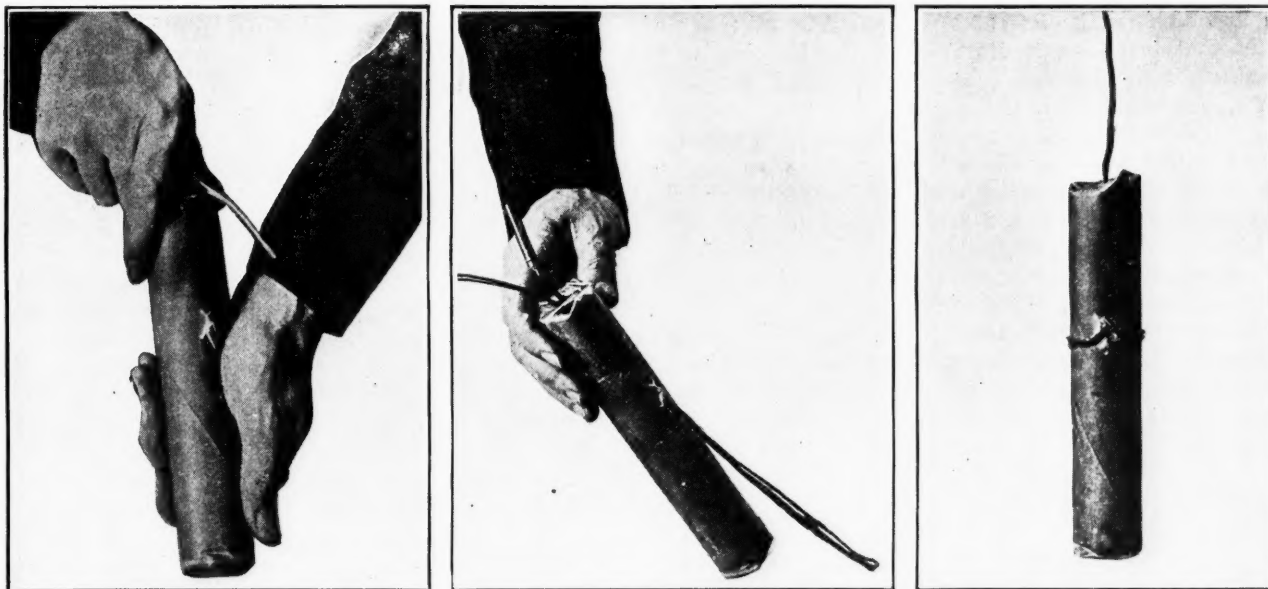
have shot a cannon ball clear through the building from side to side without touching a timber. I could cite case after case where similar conditions exist. I would suggest that every operator look well into his storage conditions along lines recommended by the manufacturers of explosives, as well as the present law, in order to conserve and save this material.

Fig. 1 shows a bad storage condition. It will be noticed that there is no chance for drainage, except by digging a long deep ditch, since the floor of the magazine is below the surface of the ground. The surrounding country shows that the magazine is so placed that water or dampness will injure or spoil its contents.

Fig. 2 shows a magazine which is much better, and will meet the necessary requirements of protecting the material stored. Fig. 6 shows an ideal magazine, well built, and with good ventilation and drainage. Fig. 7 shows a portable magazine which will meet all the necessary requirements and protect the explosives contained in it. It can be bought at a small cost, and if kept clean and painted will protect and preserve the explosives in proper condition.

The proper placing of shotholes as to depth and posi-

*Part of discussion on means of conserving mining materials, before the Coal Mining Institute of America, annual meeting, Pittsburgh, Penn., Dec. 5, 1918.



FIGS. 3, 4 AND 5. ILLUSTRATING THE PROPER METHOD OF PRIMING A CARTRIDGE

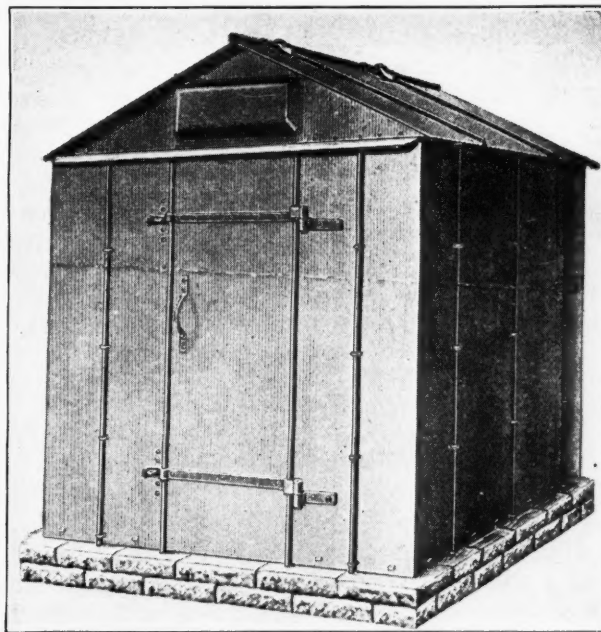
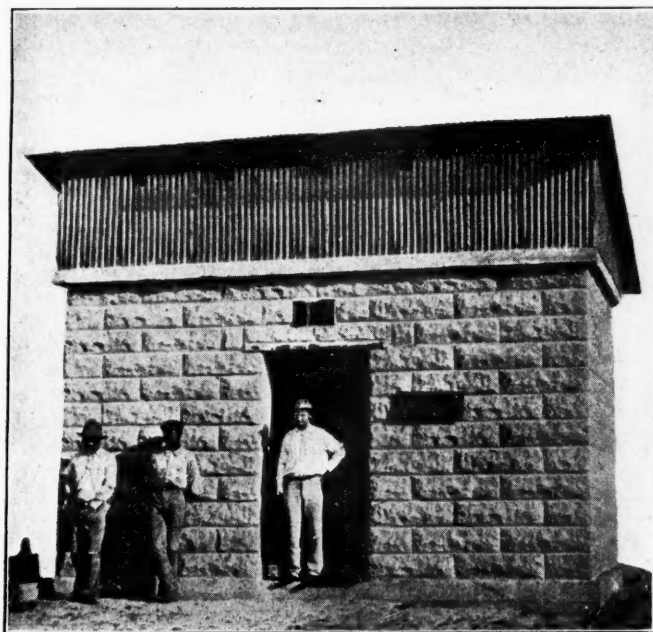
tion is an important factor, as is also the method of tamping. This fact should be noted carefully: It has been proved beyond a doubt that all explosives, whether dynamite, black powder or permissibles, when properly tamped, add from 50 to 70 per cent. to their efficiency. The undercharge, the overcharge, the improper placing of the cap or the electric blasting cap, all are important and worthy of time and consideration in order to save explosives and obtain the highest efficiency from those employed.

Some ten years ago a school was started for the purpose of teaching the proper use of permissibles. I remember one company had 33 traveling instructors engaged in this work. Many readers will recall hearing the question, "How much of your powder do you intend to use for that shot?" The answer, "Three sticks." "Well, 2 to 2½ is sufficient of this powder." In this

case the prime motive was not conservation of explosives, but there was nevertheless an evident attempt made at education in the direction of conservation, and to show that a saving was possible.

The proper undercutting of coal is an important matter. If making a 5-ft. undercut, the cut should be an even 5 ft. from rib to rib; if 6 ft., the cut should be an even 6 ft. clear across the room and free from sprags. Careful work means a wonderful saving in explosives.

All fine coal and bugdust should be removed from the undercut. If snubbing is practiced, the coal should be loaded out before second-shooting. The "breaker," or "buster," shot should be fired first. The coal made by this shot should, if possible, be loaded out completely before more shooting is done, as by following this method the best results are attained in the next shot.



FIGS. 6 AND 7. PERMANENT AND PORTABLE MAGAZINES OF GOOD QUALITY

Fig. 7 shows the line of least resistance taken by a shot that is not tamped. To omit the tamping in a shothole in coal is analogous to placing a load of powder in a gun without inserting the wadding or the projectile. Plenty of noise may be made, but little effective work will be done by the charge of powder. Fig. 8 shows the shattering effect on the coal of an improperly tamped shot, while Fig. 9 shows the results of a shot which has been properly tamped.

Figs. 3, 4 and 5 show the proper method of placing the electric blasting cap in the charge of explosives. It will be noticed that a hole is first punched from the center of the end of the stick to the center of the side. A loop of the fuse wire is then pushed through this hole and the blasting cap drawn down into the stick; the lower end of the stick is then passed through the loop and the wire drawn up tight. The proper placing of the detonator in the charge of explosives, the proper

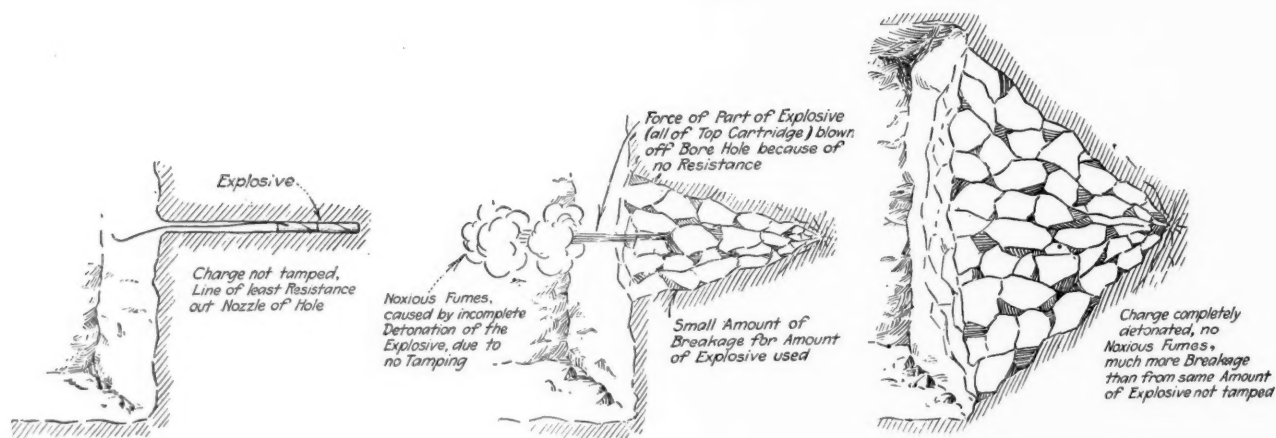
Continuance and Modification of Government Control*

BY F. S. PEABODY

Chicago, Ill.

I consider the coal industry the greatest industry in the world. Without coal there could be no real progress. There is nothing in which all of the people of the United States are more deeply interested than in coal. Nothing reaches nearer home than coal, since every person is interested in its consumption, transportation or production. Many thousands of men are employed in its production, and more than 80 per cent. of the cost of producing coal goes to labor.

As Samuel Gompers says, "These men must be kept employed. You cannot get freedom on an empty stomach. To maintain the standard of the American working people will furnish the greatest impetus to



FIGS. 7, 8 AND 9. SHOWING THE EFFECT OF PROPER AND IMPROPER LOADING AND TAMPING

placing of the hole in the coal, the proper loading and tamping of the charge, all have a direct bearing on the amount of coal secured per ton of explosive used.

In conclusion, allow me to diverge from the subject in hand and speak of one which is now of great importance; namely, the conservation of man power. During the serious epidemic which has just passed, it was deemed necessary to close the saloons. Many coal-mining men immediately noticed and remarked the general effect on their men and their output.

It has been my privilege to often ask this question of coal mine officials: "What has been the general effect on working conditions arising from the closing of the drinking places?" Invariably I have received the answer that the men are more efficient and have applied themselves to their work with more enthusiasm. Furthermore, there has been a greater output the day after payday while the saloons were closed than was ever achieved at any other known period.

Our duty then, not only as coal operators but as plain, ordinary, everyday law-abiding citizens, is clear: Close the saloons and bring out the real efficiency of the men.

Trained rescue crews wearing apparatus, as soon as they arrive at the scene of a mine disaster and have made necessary preparations, should immediately begin to explore the mine in advance of the recovery crews.—*Rescue and Recovery Operations in Mines.*

progress and civilization; the discontent of the hungry leads only to chaos and inaction."

I further quote from Frank Morrison, secretary of the American Federation of Labor, who says that "regardless of the wishes of any individual or group, any reduction in the present standard of living will be opposed. By standard of living I refer to substantial food, housing and all necessities to well-ordered living."

Labor is interested not alone in the dollar, but in how many things can be bought with the day's work. The world war has brought new responsibilities to everyone—to the employed and the employer. I see no difference between the great labor leaders and the great industrial chiefs. Both have been dreamers and idealists. One group has been dreaming and acting on the extension of industry and the returns on invested capital, and the other group has been dreaming and acting on the welfare of the people they represent; but under our new responsibilities, both must look at the other's side and meet on a common ground.

I view with great concern the departure from the capital of such men as Schwab, Ryan, Garfield, men possessing an intimate knowledge of the industries which they have been directing, and turning their work over to bureau chiefs, who though their intentions are

*Address before the Reconstruction Congress held under the auspices of the United States Chamber of Commerce, Atlantic City, N. J., Dec. 4, 1918.

of the best have not the broad vision and industrial experience of the big business men of the country.

I view with equal alarm the departure from the country of such men as Gompers and other labor leaders at this critical period, as their advice and counsel are needed on the great questions that this country must solve at this crucial time.

I believe that the Fuel Administration should be continued until peace is proclaimed, and strongly favor a continuation of the zoning system and price regulation until the Lever act ceases to operate.

Under the Lever law there are two important industries that were taken control of by the Government—food and fuel production. The Government made a contract with the farmers for wheat at \$2.20 a bushel, and this contract covers not only the wheat in existence today, but the crop of next year, yet unplanted. What would be the result of the breach of this contract? Chaos and almost revolution. The Government made a contract with the union and nonunion miners to pay a definite rate of wages up to the time that peace was proclaimed. The Government made a contract with the coal operators, authorizing them to charge certain definite prices for coal, provided they carried out the Government's agreement to pay the wages the Government had contracted to pay the miners. Nothing but chaos could result from a breach of this contract—the shutting down of industry, congestion of railroads, and the necessity of a readjustment of wages during the most critical period in the industrial history of the United States.

SHERMAN LAW RESPONSIBLE FOR WASTE

So far as price and distribution of coal are concerned, the Lever bill has suspended the Sherman anti-trust law, but with the proclamation of peace the Lever law will automatically cease to exist. We cannot go back to the survival of the fittest policy, which has resulted only in ruin and destruction in the industry.

The Federal Government, states or municipalities should not own or operate fuel facilities, except distributing facilities at isolated points, and then only when it is impossible to have such facilities operated by those in the industry. The individual who has made a life study of coal production can operate mines better than the Government.

Congress should be asked to reassemble and reconstruct the present laws prohibiting the combination of trade, commonly called the "anti-trust" laws, and make them clear, reasonable and adequate.

The Sherman anti-trust law is responsible for the heavy loss of life and the wasteful methods of mining under which approximately 50 per cent. of the natural resources of the country are ruined for future generations. All of us are extremely anxious to protect the lives of our workmen by the installation of every known safety device. Our workmen are entitled to this, but the installation of such devices involves the investment of millions of dollars with no assurance of return of either principal or interest, as the Sherman law prohibits a discussion of competitors' prices which should cover cost and returns on investments.

None of us favors the wasteful methods of conducting our mining operations, and all would be willing to employ methods under which practically all of the coal

would be recovered; but this would involve heavy investment over long periods before any return could be expected. Under the operation of the anti-trust law no return is assured.

The President has gone abroad to make certain that the peace which is established shall put an end in international trade to the old system of unrestricted cut-throat competition between one nation and another. To insure this result, he is advocating new standards of international policy and international trade, with some effective agency to maintain these new standards. Examined in detail, his program means international division of markets, international control of raw materials, with prices in international trade that are fair as between nations. His trip to France is a recognition of the fact that such results in international trade are impossible under unrestricted competition. If it is necessary to adopt such measures in international trade, surely the need in domestic trade for such control is equally evident; yet this is forbidden under the provisions of the Sherman Act.

Abandoned Gas Wells

When nature favors a section with both coal and natural gas, she introduces difficulties for the coal operator and gas driller alike. In regions where coal and gas are being exploited at the same time it is essential that a thorough understanding exist between the coal and the gas operator if difficulty is to be avoided. Many gas wells have been put down throughout the northern part of West Virginia, and in part of this territory where coal is being developed extensively systematic plugging of exhausted gas wells has been established.

In drilling the well, a 16-in. hole is put down for a distance of at least 50 ft. below the Pittsburgh seam. This hole is then lined with 3 in. of cement, which reduces its diameter to 10 in.; drilling then continues at this latter diameter. When the well is exhausted, a wooden plug the diameter of the hole and 3 ft. long is put in the well and forced to the bottom; on top of this is placed a lead plug of the same dimensions. This combination wood-and-lead plug is repeated 500 ft. higher up in the hole, some branches of a tree having been rammed down to offer an impediment to the descent of the wooden piece at the required distance. As before, a lead piece is put in on top of the wood, after which some 20 ft. of crushed rock and sand are placed.

At a distance of 500 ft. above this second plug the operation just described is repeated, and the plugging of the abandoned well is complete. It is essential that great care be exercised in all operations connected with gas wells in active coal fields. Should the protecting coal pillar become crushed or even seriously cracked while the well was delivering large quantities of gas, the mine workings immediately around the well would be quickly filled with the gas. A similar disaster might even occur after the well was supposed to be quiet, should a flow of gas start up again and find a way into mine workings.

All you need is a heart and a dollar. Are you helping the Red Cross in its noble work?

Some Characteristics of American Coals in Byproduct Coking Practice—II

By F. W. SPERR, JR.

Chief Chemist, The Koppers Co., Pittsburgh, Penn.

SYNOPSIS—*Conservation is served by the use of the byproduct coke oven, as the best coals formerly coked in beehive ovens are no longer essential for this purpose. High-grade, low volatile steam coals are reserved in many cases for the use for which they were intended, and mixtures of inferior coals substituted—the resulting coke being entirely satisfactory. The study of the behavior of various coals in the coking process (on a practical scale), of the quality of the coke produced, the yield of byproducts and the details of oven design and operation are touched upon.*

THE sources of the coal now being used for byproduct coking are remarkably localized. The great bulk of the supply comes from the bituminous and semi-bituminous beds of the Appalachian trough as mined in Pennsylvania, Virginia, West Virginia, Alabama and eastern Kentucky. Although some byproduct coke has been made from Illinois and Indiana coals, and an important plant will soon begin operation upon Colorado coals, the enormous reserves of good coking coals in the interior, Rocky Mountain and Pacific coast provinces have scarcely been touched by the byproduct oven in a commercial sense.

The present tendency is to use less of the expensive semi-bituminous coals—Pocahontas, Somerset, etc.—and to coke mixtures containing much larger percentages of bituminous coals, the volatile matter in such mixtures being from 30 to 35 per cent. The percentage of low volatile coal runs in usual practice from 15 to 30 per cent. Very fortunately it happens that not only do such high volatile mixtures produce larger recoveries of byproducts, but the coke itself is usually found to give better results in the blast furnace, the decrease in coke consumption per ton of pig iron being in several cases quite marked. Fig. 1 shows coke of an excellent quality now being regularly made by the Koppers ovens of the Minnesota Byproduct Coke Co. from a mixture of Pittsburgh and Elkhorn coals, containing no low volatile coal whatsoever. Of the commonly used bituminous coals, the most important come from the Pittsburgh, Freeport and Kittanning seams in Pennsylvania and West Virginia, and from two or three remarkable seams in eastern Kentucky, of which the Elkhorn is the most conspicuous. H. A. Kuhn estimated that in 1912, 75 to 80 per

cent. of all the iron production of the United States was located tributary to the coking coal of the Pittsburgh district, and, although this condition has to some extent been modified by the subsequent enormous development of the new Kentucky coal fields, it is probable that the Pittsburgh district still holds the lead over any other as a source of byproduct as well as of beehive coke.

The study of the behavior of various coals in the coking process, of the quality of the coke produced, of the nature and yield of the different byproducts, and, finally, of the adaptation of oven design and operation to produce the maximum value in byproducts consistent with the manufacture of good coke, is a real science, the importance of which can readily be recognized. A description of the large organization and equipment which is devoted by The Koppers Co. to the furtherance of this special science would make an interesting chapter in itself.

It is this science that has made possible, during the last ten years, the rapid and at the same time steady progress in oven construction, without the haphazard design of costly alterations of the previous decade. The engineering feat of building a battery of coke ovens out of several different kinds of refractory materials, of most complicated and varying coefficients of expansion, so adjusted and coordinated that, although the total longitudinal expansion of the battery when heated to operating temperatures is nearly 4 ft., every oven wall is straight and every flue is gas-tight—such a feat is being repeated so many times that we are apt to lose sight of the high degree of skill involved. Something possibly more remarkable is the uniform and correctly proportioned heating to temperatures ranging considerably over 2000 deg. F., by gaseous fuel, of more than 700 sq.ft. of interior wall surface per oven—or, let us say, 50,000 sq.ft. in a battery of seventy ovens. Yet even such accomplishments will often fail if we neglect the investigation of the coal which the ovens are expected to handle.



FIG. 1. COKE MADE FROM PITTSBURGH SEAM COAL MIXED WITH 20 PER CENT. ELKHORN SEAM COAL

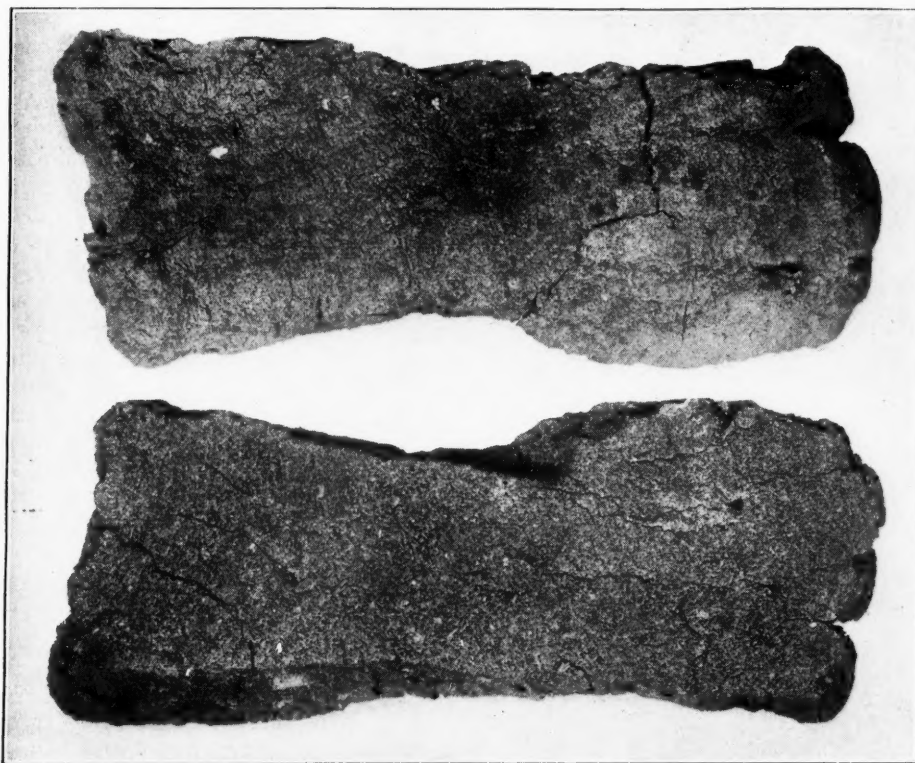


FIG. 2. BLOCK OF TYPICAL COKE FROM COALS OF PITTSBURGH DISTRICT.

It is well known that the ordinary methods of laboratory investigation of coal—proximate and ultimate analysis, determination of calorific value, etc.—do not afford much assistance in obtaining information about the coking quality. From a general commercial standpoint some of them—*e.g.*, determination of ash, sulphur, and phosphorus, composition and fusing point of the ash—are indispensable. All of them have their place in adding to the sum-total of our knowledge of coal, and the writer believes that anything, no matter how remote its apparent application, that adds to that knowledge will, in the long run, aid in a more thorough understanding of the coking quality. As has been shown by the painstaking work of Doctor White, of the United States Geological Survey, a study of the amount and nature of combination of the oxygen is especially promising in this connection. No practical substitute has yet been found for the actual distillation of the coal under conditions simulating those that occur when it is coked on a large scale. This is not so easy as it sounds, because the conditions are very complicated, and very insignificant modifications of them in the laboratory lead to the most erratic results. The idea is widely prevalent that ammonia, tar, benzene, toluene, naphthalene, cyanogen,

etc., are in the coal, the same way that iron is present in hematite or calcium oxide in marble, and that all the chemist has to do is to “analyze” the coal, to find out the amounts of these substances it will produce when coked in a byproduct oven. Such an idea is far from the truth. Coal contains merely the elements that under certain conditions of heating may go together to form these and other substances; but it no more contains these substances originally than an acre of uncultivated soil contains wheat or potatoes. The amount of variation possible in the yields of byproducts under different conditions is quite analogous to the variation possible in crops per acre of soil, depending upon fertilization, temperature, rainfall, etc. Most published results of laboratory coal distillations are on

this account almost valueless for comparison with byproduct coke-oven practice.

The extraordinary possible variations of quality and yields of byproducts might make laboratory investigation seem almost hopeless, were it not for the fact that in almost every case we can fix one fundamental rule; namely, byproducts both in quantity and quality must be conditioned upon the production of a satisfactory coke.

In our methods for testing every sample of coal proposed for use in a byproduct coke oven, the conditions

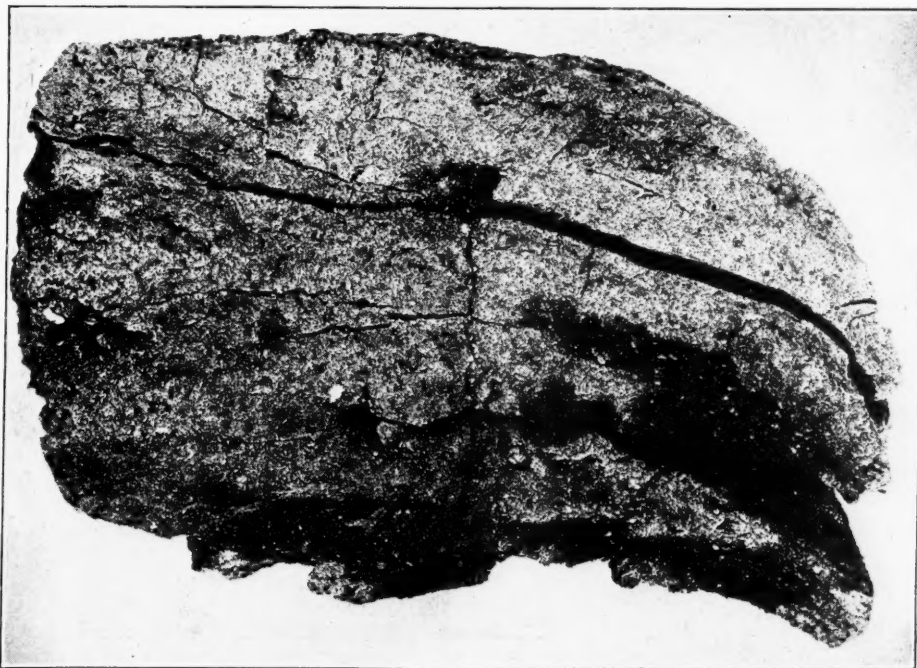


FIG. 3. COKE FROM 100 PER CENT. ILLINOIS COAL (DISTRICT 6, BED 6)



FIG. 4. COKE FROM UNMIXED COAL, PITTSBURGH SEAM, LOWER CONNELLSVILLE DISTRICT, FAYETTE COUNTY, PENNSYLVANIA

of distillation are adjusted according to this rule; and we are able in each case to predict to a reasonable degree of certainty the behavior and products of any coal in our type of oven. The yields of byproducts can be determined very satisfactorily by this method in the laboratory, but any estimate of the quality of the coke must be checked by an oven test. The oven test is desirable, not only to ascertain the character of the coke made under ordinary operating conditions, but also to determine how these conditions must be varied in order to produce the best possible coke from the coal in question. As has been pointed out in a previous article, the possibilities of making coke conform to a desired standard, by proper preparation, oven construction, coking regulation, and, as a last resort, mixture with some other coal, are remarkably great—much greater, in fact, than is generally supposed. The mistake of rejecting

or "pebbly" coke that is very likely to be produced from a coking coal of high oxygen type. As a rule, such coals require more careful adjustment and regula-



FIG. 5. COKE FROM UNMIXED COAL, ELKHORN SEAM, KENTUCKY



● FIG. 6. COKE FROM MIXED WASHED COALS, PUEBLO COUNTY, COLORADO

a coal for coke-making purposes on account of poor results obtained from a single test should be carefully avoided. Some illustrations of cokes made from coals from a number of the best-known American coal fields are given in Figs. 2 to 8. Fig. 3 is shown by courtesy of F. K. Ovitz, of the United States Bureau of Mines, who has written a very interesting bulletin on coke from Illinois coals.¹ These illustrations are characteristic of the fingery

or "pebbly" coke that is very likely to be produced from a coking coal of high oxygen type. As a rule, such coals require more careful adjustment and regulation of conditions in order to produce a satisfactory coke than is necessary in the case of the commonly used coals of Pennsylvania and West Virginia, which contain about the same percentage of volatile matter, but less oxygen. A typical block of coke made from coals of the Pittsburgh district is shown in Fig. 2. The other pictures show the various cokes as they appear on the bench onto which the product of each oven is emptied from the quenching car. Fig. 8 is of some special interest because it shows an excellent coke made from a Nova Scotia coal which contains nearly 40 per cent. volatile matter. Each of these illustrations should be considered individually rather than as broadly typical, because the cokes were

¹U. S. Bureau of Mines Bulletin 138.



FIG. 7. COKE FROM MIXED WASHED COALS, PIERCE COUNTY, WASHINGTON

made at different plants and for different purposes, and were not intended for strict comparison. There is usually too much variation in the coking quality and byproduct yields of coal from even a small district to admit of the presentation of "typical" samples or data, without the necessity of considerable latitude of judgment. There is sometimes as much variation from mine to mine on the same seam as from coal from two entirely different seams.

There is here a very interesting and virtually unexplored field, namely, the correlation of the geological relations of coals with their coking qualities. There is no doubt that this subject is of great practical importance. A thorough knowledge of it would, for instance, enable us to estimate from simple geological considerations the value of a new mine on a known seam for by-product coking; or, on the other hand, would assist in defining an unknown seam in new territory from the results of laboratory coking tests. Our present knowledge, however, is much too meager for this. There are a few outstanding facts which will be discussed briefly.

(To be concluded)

Concreting Work in Cold Weather

Occasions arise when concreting must be done regardless of season and temperature. The requirements of successful concrete work under conditions of low temperature are so generally known, says the *Engineering*

and *Cement World*, that the work will be just as successful as though carried on during warm weather. The extra cost on the general run of contracting during such adverse conditions seldom runs more than 10 per cent. of work done in warm weather, and frequently not more than 6 per cent. Part of this extra expense comes from applying protective measures and partly from the lower efficiency of workmen exposed to the cold. Also some of the increased cost may be caused by the added time necessary for the concrete to harden, preventing as speedy progress of the work as under normal conditions. The general opin-

ion seems to be that freezing will not injure concrete which has had an opportunity to harden for at least 48 hours under favorable conditions. Should concrete be allowed to freeze and thaw at short intervals, before early hardening has taken place, it will be damaged. Sometimes concrete will not show any serious effects from once having been frozen if, after it thaws out, it is not again frozen until early hardening is complete. However, it is much better to protect the concrete from freezing for at least 48 hours after it is placed; from four to five days' time would be better. If such protection is given it, little need be feared when the concrete is exposed to freezing weather.



FIG. 8. COKE FROM UNMIXED WASHED COAL, NOVA SCOTIA

Acetylene and Electric Cap Lamps from a Safety Standpoint*

By H. M. CHANCE

Philadelphia, Penn.

SYNOPSIS—*Shows that many of the dangers encountered by miners are increased by lack of lighting. The relative merits of acetylene and electric cap lamps are tabulated, and a suggestion is made that Government experts compile statistical tables based on comparisons of total light by candle-power determinations made under precisely similar conditions.*

THE acetylene safety lamp has been used underground in relatively small numbers and no argument used in this discussion is intended to refer to acetylene safety lamps. This discussion is further limited to the use of acetylene open lights and electric cap lamps in mines that ordinarily are termed "non-gaseous"; that is, mines that produce no inflammable gas, mines that produce inflammable gas in such small quantities as to be practically negligible as an element of danger, and mines that, while producing larger quantities of inflammable gas, can in certain portions be made relatively safe for the use of open lights.

It is, of course, evident that in mines where open lights are used, the danger of ignition of inflammable or explosive mixtures of combustible gas and air from the flame of such lamp is practically the same, whether the lamp be an oil torch or an acetylene lamp. There may be minor differences in the danger of ignition by the flame of an open light, but these differences are small and unimportant.

DEFINES "MIXED" SYSTEM OF LIGHTING

It is not proposed to discuss any question of policy as to what is termed "mixed lighting" underground; that is, the use of safety lamps in some portion or portions, of a mine and the use of open lights in other portions of the same mine. Much has been said and written as to the expediency from a safety standpoint, and also from a managerial standpoint, of this use of safety lamps and open lights in the same mine. Where a mine is being worked with open lights used in all working places and the use of a safety lamp is restricted to inspection of working places by the fireboss, mineboss or other officials, such limited use of the safety lamp for purely testing purposes is not considered to constitute a "mixed" system of lighting—this term being used only where safety lamps are used in parts of the mine by the miner for the mining of coal or the driving of entries, etc., while in the same mine other miners are using open lights, or open lights are used by mule drivers, motormen, etc., on the main haulage roads.

It may, perhaps, be sufficient in this connection for the information of those not familiar with the literature on the subject to say that mining engineers, mine

executives and miners engaged in coal mining are divided upon this matter and do not seem to be able to reach any conclusion to which unanimous consent can be secured. On the one side we have those who hold that if it be necessary to work any portion of a mine with safety lamps, then the whole mine should be worked with safety lamps and no open lights whatever should be permitted to be used in any part of such mine, and on the other we have those who claim that the use of safety lamps, where necessary in parts of the mine in conjunction with open lights elsewhere, conduces to greater safety than if the opposite policy be pursued. We have also a third class, claiming that under certain conditions the use of safety lamps in the mining of coal should be enforced, while open lights may be safely used upon the main haulage roads over which the coal is transported to the outlet of the mine, and over which the empty cars are returned to the points from which they are distributed to the working places. This subject is one of very great interest and doubtless will continue to be discussed for many years unless discussion be cut short by the enactment of laws requiring the adoption of the use of the safety lamps exclusively in all mines classed as "gaseous" mines.

DANGER OF MINE FIRES WITH OPEN-FLAME LAMPS

Returning to the subject which it is the object of this paper to discuss, it may be well, in advance of a review of the physical differences in the two types of lights under discussion, to outline the elements of danger or of safety in which lighting may be an important factor. Having excluded from the discussion any question of the ignition of inflammable gases or mixtures of inflammable gases and air, by limiting ourselves to a consideration of the use of these types of lamps in "non-gaseous" mines, we have remaining one element of danger which in many cases is of great importance and which must always be increased by the use of any open flame light, whether the light be produced by acetylene, by candles or by any type of oil torch. This is the danger of mine fires.

In mines of all classes in which combustible material exists there is the ever-present danger of mine fires. In many cases this is greater in coal, sulphur and other mines in which the material mined is of a combustible nature than in metalliferous mines or mines working a mineral which is not combustible. Aside from spontaneous combustion, which is foreign to the subject under discussion, the danger of the direct ignition of coal from an open light is comparatively small. Fires in coal mines caused by open lights usually are due to the accidental setting on fire of mine timber, cotton waste, wooden boxes or other material, and not to the direct ignition of the coal from the flame of the light. The origin of such fires in coal mines, therefore is often similar to that of fires in metalliferous mines, in

*Paper read at the seventh annual congress of the National Safety Council, St. Louis, Mo., September, 1918.

which the fire is confined to the timber ring or other combustible material which has been brought into the mine.

It may at this time be well to refer to the common presence in mines of many different types of combustible material which are brought into the mine for various purposes. Where mules are kept underground we have, of course, hay and grain and the straw used for bedding, which frequently have been the cause of serious mine fires. In many mines we also have oil houses and lamp houses underground, in which oil for the lamps and lubricating oil for machinery is stored, and engine houses where machinery (such as pumps, compressors, fans, etc.) is used underground. In addition to the oil there is usually cotton waste, which is, of course, universally recognized as an element of danger. While the present practice in many districts is to discontinue the use of wood, so far as possible, in the construction of permanent inclosures underground, such as engine rooms, oil houses, stables, etc., the presence of lumber in such construction is an element of increased danger when open lights of any type are used. In addition to these materials we have the timber used for roof support along the gangways, entries, drifts, levels, chutes and haulage and traveling-ways, and in the working places. In mines where a timber mattress or cushion is used between the ore being mined and the overburden, we have large quantities of inflammable material which may frequently be in danger of ignition from the use of any type of open light. Again, in the working places the miner frequently brings in materials that are inflammable, such as powder boxes and other waste material, and boards or planking for use as shoveling platforms, brattices, stoppings, etc.

Mine fires in metalliferous mines are of course often due to other causes than the use of open lights. The decay of timber, heat produced by the great friction of moving masses during settlement or squeezing, and other causes of spontaneous combustion, have doubtless been responsible for many fires in mines of all classes. In addition to these we have of course the ever-present risk of fire from the accidental ignition of explosives and from the firing of shots in the brooding of the ore or other material mined.

MAJORITY OF FIRES DUE TO CARELESSNESS

All of the foregoing considerations apply with nearly equal force to the use of any type of open lights. Where candles, oil torches or acetylene lamps are used there will be some danger of mine fires being started by the flame of such lights. It is useless to argue that the majority of fires so caused are due to carelessness in the use of such lights. The danger in all cases, while similar, is not however exactly equal. In the use of candles we have in addition to the flame the danger caused by the dripping of paraffin, stearine or tallow, and in the case of oil torches a similar increase in danger from the dripping of oil from a leaky lamp or from a lamp or from the wick spout. In the case of the open oil torch we also have the additional danger due to the carriage of oil and the presence of oil in quantity kept underground for the use of the miner, and also that carried by him for supplying his lamp. In the absence of complete statistics showing the

cause of mine fires, it is impossible to determine the relative difference in the character of the lights which may tend to increase or diminish this danger.

It will readily be understood that the danger of mine fires from the use of open lights will depend largely on whether the mine is relatively wet or relatively dry or damp. In regions where the air is extremely dry and the mines contain but little water, the timbering is much drier and the risk of mine fires correspondingly greater and the difficulty of extinguishing fires is increased, of course, by the dryness of the timber. This statement applies with equal and perhaps greater force to coal mines, because in coal mines that are relatively wet or in regions where the air is relatively highly charged with moisture, the coal is not so easily ignited by burning props or mine timber of any kind as when the mine is dry or is located in a more or less arid region. It is evident, therefore, that as the danger of mine fires is increased by the use of open lights underground, the electric cap has a decided advantage over any open flame light.

MINER SUBJECT TO MANY ACCIDENTAL RISKS

In addition to the elements of danger peculiar to mine employees the miner is subject to many of the accidental risks commonly met by men on the surface. It would be beyond the province of this discussion to enumerate the hundreds of kinds of accidents which occur underground. In going to and from his work and in working in the room, chamber or stope in which his principal work is done, the miner is often the victim of an accident that may be designated as belonging to the "self-inflicted" class. In this class may be grouped all those accidents resulting from the use of tools employed in mining. The miner may accidentally strike himself or be hit by some flying fragment of coal or ore, be injured with a pick, may become entangled by machinery, or receive injuries from electric shock—there are many ways in which he may accidentally cause injury to himself or a fellow employee. He may injure himself by tripping over an obstacle, by falling down some hole, winze, shaft or other excavation, may be run over by a mine car, kicked by a mule, fall from a scaffolding or ladder, to illustrate that general class of accidents which are due to the voluntary or involuntary act of the employee which are avoidable. In many cases they are due to carelessness on the part of the miner or a fellow employee and do not belong to that class of accidents which are due to the risks peculiar to underground work. We may include in this class many accidents due to shots that have missed fire, to the presence of explosives in ore or coal which is being loaded by the miner, and many others which will be found in the reports of the mine inspectors in the states in which mining is conducted on a large scale.

I have not had the time to compile lists of accidents which belong to the class which has been described above as due to the voluntary or involuntary act of the miner or fellow employee and which are not due to dangers which are peculiar to underground work, but he is of the opinion that such compilation, if made, would show that most accidents underground belong to this class and that a much smaller proportion will be found chargeable to conditions which are peculiar to underground work.

I also believe this class of accidents is more important than that of all other classes combined and should be given prominence in any discussion, from a safety standpoint, of the use of the acetylene light as compared with that of the electric cap lamp.

It will probably be admitted without discussion that the risk of accidents resulting in injury or death to the miner will decrease as the efficiency and volume of light is increased. There can be no question as to whether accidents of this class occur more frequently underground than on the surface. The principal (but not the only) reason why accidents in this classification are more frequent underground than at the surface is undoubtedly due to the difference in the amount of light and in the illumination of the tools, etc., being used. It is also true that accidents of this class, underground, are increased over those that occur in similar work at the surface, because of less efficient supervision by foremen and supervision by foremen and superintendents as to the condition under which the individual employee is working. Neither the mine foremen, mineboss, or superintendent can continuously be present to supervise the work of the individual employee to notify him to avoid risks of injury, or to reprimand him for obvious carelessness. Therefore it is evident that the increase in accidents of this class underground is not entirely chargeable to deficiency in illumination, but is partly due to the impossibility of exercising as efficient supervision underground as at the surface.

As increased efficiency in illumination—that is, increase in the light furnished the individual employee—will materially reduce the risk of accidents of this particular class, it is evident that the acetylene light is superior to the electric cap lamp of the type and candlepower ordinarily used; also that the acetylene light is better than oil torches or candles, because of the greater illumination which it affords.

REASONS FOR USE OF ACETYLENE LIGHTS

The miner using an acetylene light is less likely to stumble, fall, or come into contact with electric wires, be run down by mine cars, injure himself or a fellow employee with hand tools, implements or machines used in mining; is less likely to miss his footing in climbing ladders or traveling winzes or stopes not provided with ladders, than if he were doing these things with the light afforded by the ordinary electric cap lamp.

In speaking of accidents peculiar to mines, it is not intended to include accidents due to the explosion of combustible gases, the burying of miners by accidental caving or squeezing whereby the travelingways leading to the surface are closed, accidents due to the flooding of mines, or to any cause not affected by the method of illumination.

The principal cause of those accidents underground are due to the falling or caving of the roof in working places or on the traveling or haulageways along which the miner travels and through which the material mined is transported. These accidents, generally, are not due to any direct act of the miner or his fellow employee but arise from some weakness in the material forming the roof or to a failure to recognize such weaknesses and to take measures to avoid the danger. This danger is present to a greater or lesser extent in

all mines, but under some systems of mining it is reduced to a negligible factor by the method by which the material is mined; for instance, in the system where a mattress or cushion is used between the material being mined and the overburden, there is, of course, no direct danger from falling roof; the danger in such cases is from a general caving in or squeezing.

In addition to the hazard caused by a weak roof, or an insufficiently timbered roof, there is the danger of falls from material being mined. Where deposits inclined at a high angle or pitch are being mined, the danger is principally from this cause and not from the roof or hanging wall of the deposit. When the deposit is relatively flat and of considerable thickness, there is danger of fragments falling from the walls or face of the material.

While this phase of the risks peculiar to work underground is of importance in connection with any consideration of the system of illumination used, it can be dismissed with very few words, because it is evident that the risk of injury will be reduced by an increase in the illumination of the working places, or of places where such roof falls or falls of material are likely to occur. The subject, however, is one which could be discussed at great length in its various bearings.

VALUE OF INTENSIVE LIGHTING UNDERGROUND

The advantage of high illumination in working where the roof or the material mined constitutes an element of danger from falls has been recognized in many districts by the installation underground of electric arc systems of lighting, by which it becomes possible to more thoroughly inspect the roof from time to time and to more quickly detect dangerous conditions which may develop. Further, the use of such intensive lighting is of great advantage in prosecuting the work of removing the danger, either by the removal of loose material or the placing of supports to greatest advantage in places showing, or likely to develop, weakness.

The same principle applies to taking care of the roof in the rooms or chambers of coal mines, and in small stopes of mines working ore deposits, and it is evident that the high candlepower furnished by the acetylene lamp will contribute to the safety of the miner and his fellow employees, not only by enabling him to more readily and surely detect any dangerous condition at or near the place where he is working, but will assist him in setting his props or other supports in the best position to reduce this danger to a minimum. Failure to set such props or supports in the best position, or in a position where the prop gives such support as will remove the danger, is a frequent cause of accident, due to the fact that the miner having set the prop, or props, and believing that he has placed them properly, will then perhaps unnecessarily expose himself to greater risk than if he had taken no measures to prevent the roof from falling.

Unfortunately, there are no records available showing whatever difference there may be in the number of accidents from roof falls in mines worked with safety lamps (which, of course, give very small and inefficient illumination) and mines working under similar conditions as to roof in which open lights are used. I have suggested to the Bureau of Mines that statistics of this kind should be obtained, because this has an

important bearing upon the expediency of using safety lamps, and I understand that measures will be taken to secure such data. It must, however, be some years before sufficient information can be compiled to be useful in drawing conclusions as to the increase, if any, in roof-fall accidents which may be traced to the use of safety lamp illumination.

In the absence of these data it is of course impossible to say how much higher illumination of the acetylene light over that of the ordinary electric cap lamp will increase the safety of the miner in relation to accident from roof falls and falls of ore, coal or other material.

The acetylene lamp is objected to by some because it does not give as early warning of a deficiency in oxygen in the mine atmosphere as that given by an oil flame lamp, but by others this peculiarity of the acetylene flame is regarded as furnishing an added element of safety. The difference in the action of oil and acetylene flames in an atmosphere deficient in oxygen may be compared to the customary use by our railroads of green and red as danger signals. The green signal means, "Danger ahead, proceed with caution." The red signal means, "Danger, Stop!" One is a caution, the other serves as an imperative order to stop at once.

So it is with the lights. When the oil lamp begins to fail the air is still respirable; the flame may go out and the air may still be respirable—the warning to the miner being cautionary but not positive. Hence, he may walk directly into a deadly atmosphere. When, however, the acetylene flame begins to fail, or is extinguished, the miner knows that the danger is *actual* and is *present* and that he must at once retreat or be overcome.

In mines where atmospheres deficient in oxygen are likely to occur both oil and acetylene flame lamps are safer than the electric cap lamp, for the latter gives no warning whatever of any deficiency of oxygen or of the presence of any poisonous constituent in the mine atmosphere.

RELATIVE MERITS OF ACETYLENE AND ELECTRIC CAP LAMPS

	Acetylene Lamp	Electric Cap Lamps
Weight.....	Light	Heavy
Length of shift.....	Can be prolonged	Fixed
Quantity of light.....	Can be increased above normal	Fixed
	Can be reduced below normal	Fixed
Warning as to irrespirable atmosphere	Gives warning	Gives none
Repairs.....	Burner can be renewed or cleaned if clogged	*New bulb can be inserted
Mine fires.....	May be cause of mine fires	Not likely to cause mine fires
	Danger may be reduced by wire mesh guard or mica chimney to protect flame	
Extinguished by shotfiring.....	Yes (Can be equipped with aermetal or other re-igniter)	No
Debatable uses.....	In mines where timber is very dry In mines where coal is very dry and there is much coal dust	Can be safely used under these conditions

* NOTE—In the electric cap lamp, as constructed for use in gaseous mines, no provision is made for replacing a broken bulb (or defective bulb)—but the lamp can be so constructed, if desired, for use in non-gaseous mines.

I have not attempted to show the difference in the illumination afforded by these two types of lamps, but may say for the information of those who are not familiar with the subject that the figures of candlepower as given in many publications must be analyzed

before making a comparison. If the light, as in the electric and acetylene cap lamps, be concentrated by a reflector to illuminate a certain spherical sector, the light in this section is, of course, of much greater candlepower than if the light be permitted to radiate in all directions. Owing to differences in the reflecting mirrors used for this purpose, both as to design, polish, size and condition, and owing to the difference in the shape of the flame of an acetylene lamp and the incandescent filament of an electric cap lamp, many of the candlepower tests reported by different observers cannot be compared directly. It seems to me that the only fair basis for comparison would be to determine the *total light* by candlepower determinations made under precisely similar conditions, and the *available concentrated illumination* by determinations using the most effective reflectors for each of the two types. I do not know whether this has been done or not. From observations that have come to my knowledge from various sources within the last three or four years I believe that the available illumination given by an acetylene cap lamp, burning normally at average rate, is from three to six times that produced by an electric cap lamp operating under average and normal conditions. The difference in the concentrated illumination may be somewhat less than this, but when the acetylene lamp is operated at its full rate (and many miners so operate them continuously) the difference is often twice that indicated by these figures.



From The Retail Coalman

No Wonder Hard Coal Is Scarce!

Coal-Handling Plant at Sewalls Point, Virginia

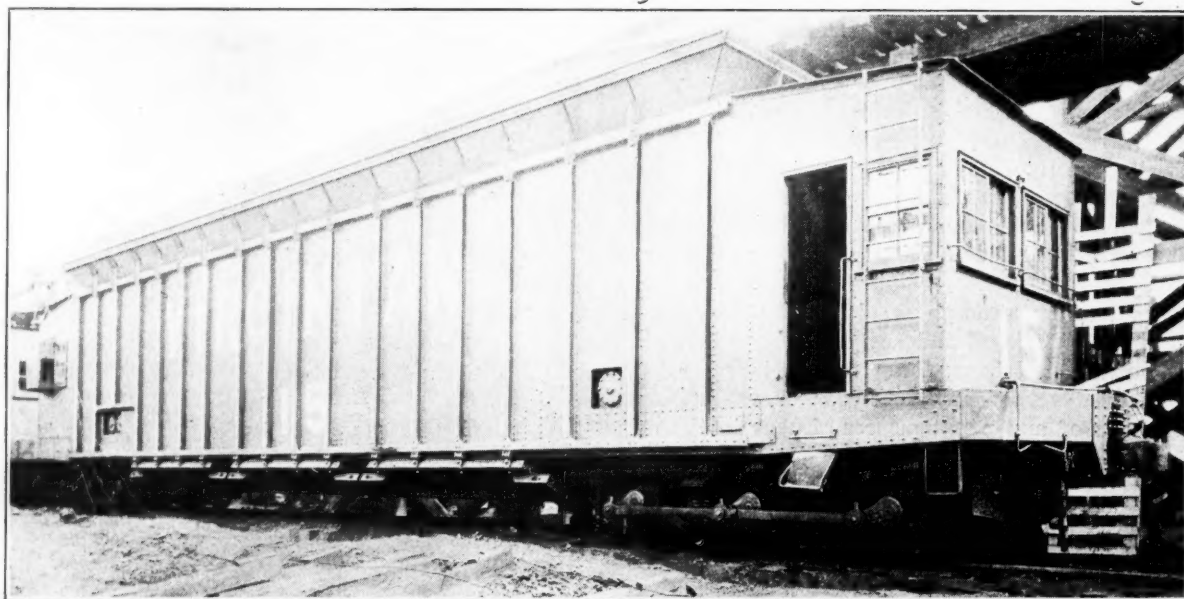
New Facilities of Virginian Railway at Coal Pier near Norfolk
Also Include Cars of 120 Tons Capacity and a Long Incline

A DOUBLE car dumper, with pier cars of 120 tons capacity and an elevator to raise them to the top of the pier, has been added to the facilities of the coal pier of the Virginian Ry. at Sewalls Point, near Norfolk, Va. They supplement a single dumper, pier cars of 60 tons capacity and a barney incline from the dumper to the top of the pier, installed in 1909, when the pier was built, and increase the capacity of the plant from 1500 to 3000 tons per hour. The operation of the pier is the same as before, the pier cars for both dumpers running out to the end of the pier by electric power on the outside track and returning down the inclined center track.

The double car dumper is the first built to overturn two ordinary road cars at a time. It is 94 ft. long between end posts. The car rails are carried on a movable

the cars are inverted to an angle of 20 deg. with the vertical. The clamps as well as the cradle are counterweighted, this facilitating the return of the cradle to its former position.

Coal dumped from two cars end to end is distributed over a maximum length of about 88 ft. This is much greater than could be gathered in the hopper of a transfer car, which in this case is about 51 ft. In order that all the coal from the road cars shall be properly discharged into the transfer cars without resort to a concentrating chute, which would at once result in an extreme drop of the coal, two steel apron conveyors are provided, each about 8 ft. wide and 34 ft. long, supported horizontally in a portal frame in front of the car dumper. A clear space of about 36 ft. is left between the conveyors, which form a portion of the bottom



ONE OF THE LARGEST COAL TRANSFER CARS EVER BUILT—CAPACITY 120 TONS

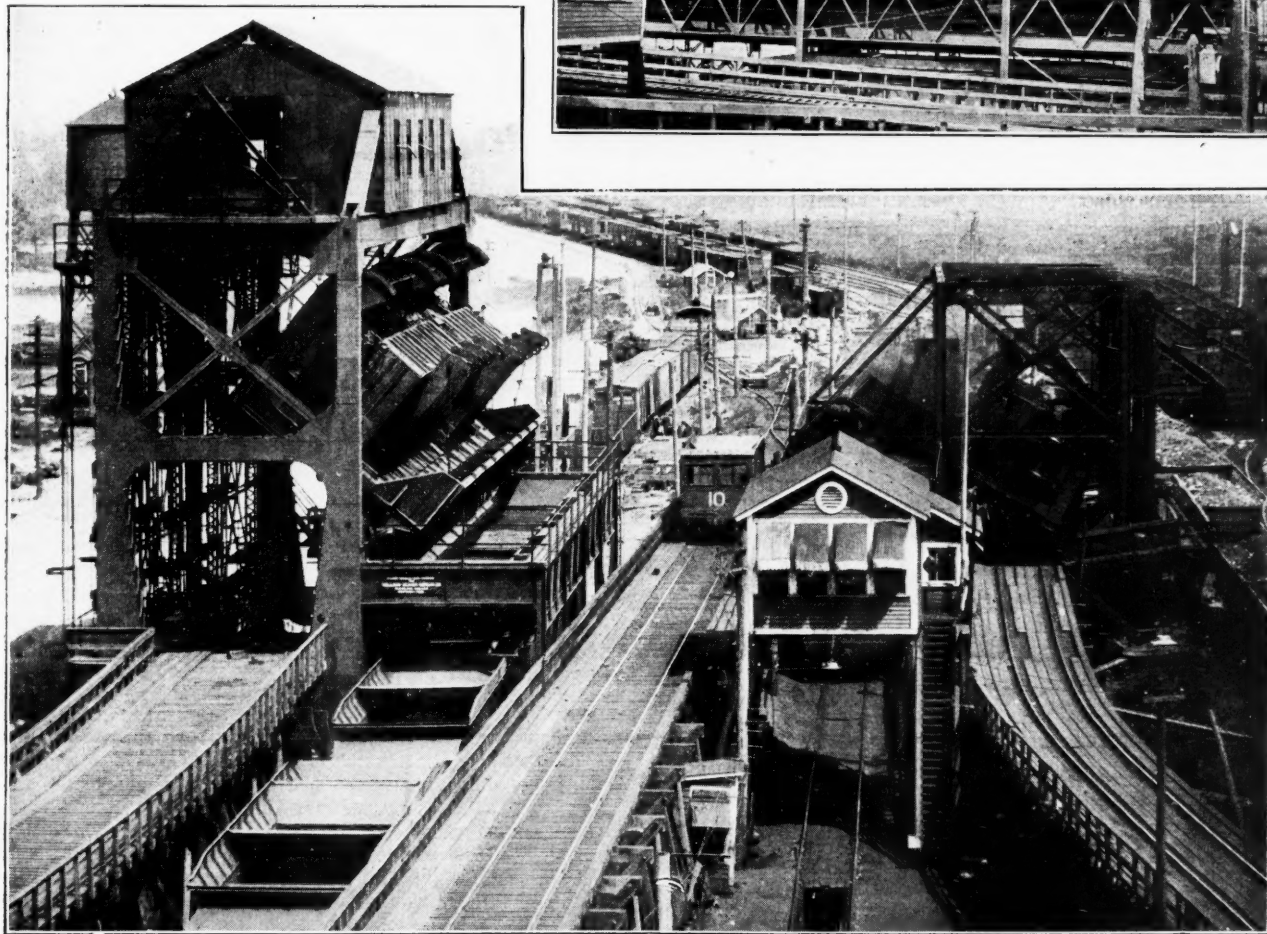
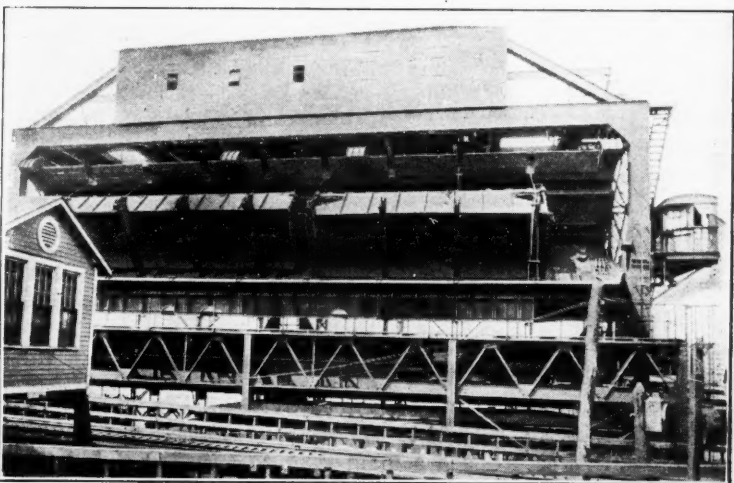
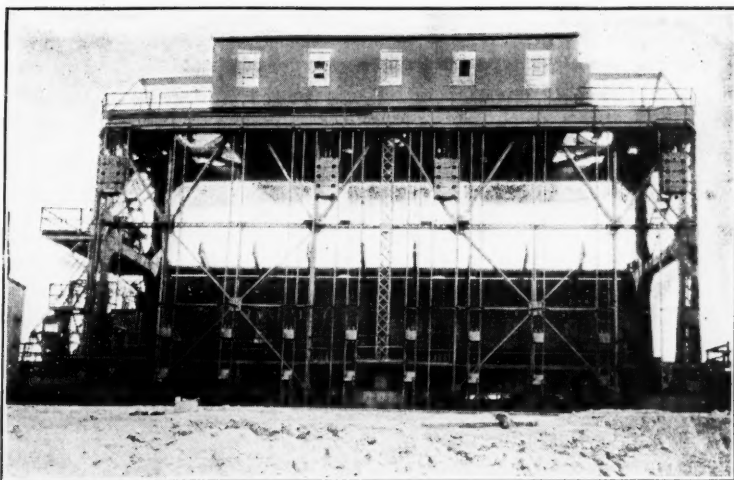
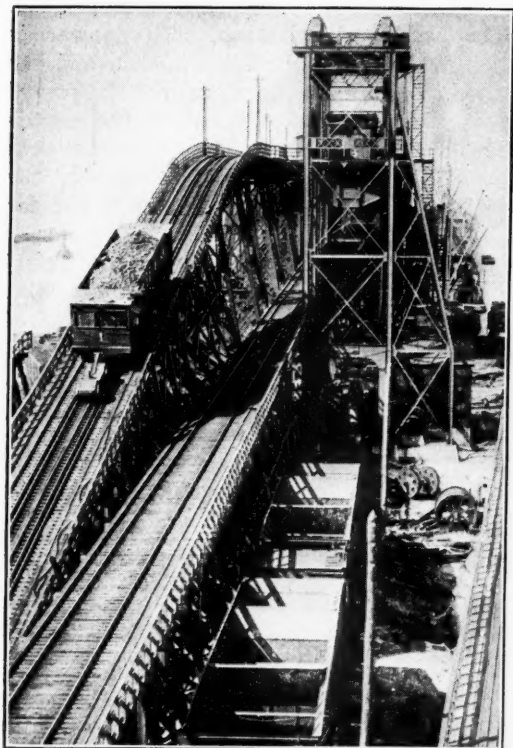
platen which rests on rollers in the bottom of the cradle—or, in fact, two platens, end to end, one for each car. When the cars are on the dumper the platens are moved laterally until the sides of the cars come securely against the side of the cradle for support. When the two cars are of about the same width it is not necessary to uncouple them, but when they are of different widths the two parts of the platen can be operated separately. Eight clamps are operated independently by counterweights which travel in guides at the rear of the machine. They are so spaced that they engage various lengths of cars and are automatically adjustable to any height or width of standard railway car.

The machinery for rotating the cradle is located on top of the main structure, where it is free from dust and accessible for repairs. After the cars have been properly placed on the cradle, the rotating mechanism is started and the cradle with the cars is revolved until

of a hopper into which the road cars are dumped. The longitudinal center of the conveyor is located directly over the center line of the transfer-car track. With this arrangement all the coal that falls on the conveyors is transferred horizontally and discharged into the transfer cars.

Two 275-hp. motors, designed to work on a direct current of 550 volts, operate the cradle, working through four drums geared by three reductions of cut spur gears.

As the cradle is rotated the contents of the car are gradually discharged over the edge of the apron plate, into the receiving hopper which carries the conveyors. This hopper, for a distance of 36 ft., is open at the bottom, and the coal is discharged directly through it into the transfer cars. The conveyors are interlocked with the cradle, so that when the rotation starts the conveyor motor is also started, and the conveyors are



TWO GENERAL VIEWS SHOWING OLD AND NEW FACILITIES SIDE BY SIDE, AND TWO VIEWS OF NEW DUMPER HANDLING TWO ORDINARY ROAD CARS AT ONCE

in full operation when the first coal falls on them. They are both operated by one 80-hp. motor.

A disappearing barney, which on the return trip, when near the bottom of the incline, follows a low-level track into the barney pit so that cars can be let down by gravity from the load yard before the barney is in position, pushes the road cars up to the dumper. Both the barney and the dumper are operated from a cab at the incoming end of the dumper. All of the speeds and the motions of the dumper are regulated to produce a complete cycle in two minutes.

The dumper will handle at once two cars of 60 tons capacity, or one of the new 110-ton hopper cars of the Virginian, which weighs 160 tons when loaded.

Transfer cars of 120 tons capacity—just double that of those originally installed on the pier—take the coal from the dumper. These cars, as one of the photographs shows, are mounted on two six-wheel equalized trucks, each of which is provided with a driving motor. The driving motors are of 60-hp. capacity, geared for a speed of 12 miles per hour.

The trucks are spaced 50 ft. center to center under the car, the total over-all length of which is about 70 ft., the height 16 ft., and the width 12 ft. The body of the car forms a hopper divided into three compartments, each having a capacity of 40 tons, the three compartments having a combined length at the top of about 51 ft. Each of the compartments is provided with a double system of discharge gates at the bottom, through which the coal passes into the pockets to the pier. The gates of each compartment are separately operated by an air cylinder located in the end of the car.

The discharge gates of each compartment are arranged in pairs and hinged to the car body at the sides and in the center, in such a manner as to provide two openings 9 ft. long by 3 ft. 8 in. wide. The operating mechanism is so arranged that the gates are securely locked when closed, and they cannot fall open.

All operations are controlled from one end, although each end is inclosed. The power for operating the cars is supplied from an overhead catenary system. The combined weight of the car and its contents is about 200 tons, making the cars the largest coal transfer cars ever built.

The transfer car elevator raises the pier cars about 67 ft. to the top of the pier. Heavy counterweights are used to counterbalance the weight of the platform and the car; they are so regulated that as much power is required to pull down the empty platform as is required to lift the platform and the loaded car. This arrangement permits the use of smaller motors than would otherwise be necessary.

The elevator is operated by two 450-hp. motors using a direct current at 550 volts. The gearing of the elevator is proportioned to produce a complete cycle in two minutes.

Connecting the frame of the elevator to the pier is a hinged run-off girder, introduced to insure perfect alignment of the rails on the platform and the pier. This girder is hinged to the pier in such a manner as to permit of a vertical movement of the free end amounting to about 2 ft. The free end of the girder rests on brackets on the elevator frame, from which it is lifted by projecting lugs on the platform as it comes to the position of its upper limit. This upper limit of travel

is accurately controlled by an electric limit switch, geared to the hoisting mechanism. The power is supplied to the trolley wires in this position, and the transfer car passes out of the elevator, over the hinged run-off girder and out on the pier, where the coal is discharged to the proper pocket. The empty car then returns down the inclined track in the center of the pier structure to the loading track in front of the car dumper, taking its regular turn.

These additions to the equipment of the terminal were installed by the Wellman-Seaver-Morgan Co., Cleveland, which company furnished the original dumper. The work was carried out under direction of H. Fernstrom, chief engineer of the Virginian Railway.

Legal Department

RIGHT TO TERMINATE SALES CONTRACT—Mere default by the buyer under a coal sales contract in paying for deliveries does not entitle the seller to cancel the agreement as to undelivered instalments. Delays in making payments do not justify a rescission by the seller where not the result of deliberate intent to break the contract, and not of such character as to amount to a substantial breach of the agreement. (New York Supreme Court, Alden Coal Mining Co. vs. C. L. Amos Coal Co., 171 New York Supplement, 980.)

STOCK IN KENTUCKY CORPORATIONS—Under the laws of Kentucky, stock in a coal corporation cannot be validly issued in return for services unless the fair value of such services equals the par value of the shares issued therefor. Where a single contract was tainted with invalidity by provision for issuance of stock at less than its par value, provision in the agreement for an exclusive coal sales agency was vitiated; the contract constituting an entirety. (United States Circuit Court of Appeals, Sixth Circuit; Detroit-Kentucky Coal Co. vs. Bickett Coal and Coke Co.; 251 Federal Reporter, 542.)

DEMURRAGE ON WATER SHIPMENTS—Provisions in a bill of lading concerning demurrage on water shipments of coal are binding upon the consignee. For a railroad which owned a dock to reserve discharge towers and prefer vessels carrying its own coal was not unreasonable. Therefore, the owner of a schooner carrying a cargo of coal and discharging at that dock, under a clause in the bill of lading giving a double rate of demurrage for detention on preference being given later arriving vessels, was not entitled to double demurrage because vessels carrying coal for the railway company were given a preference. Such provision for double demurrage is to be regarded as applying only when preference is given out of the usual course of business. (United States District Court, District of Massachusetts; Davis vs. Garfield & Proctor Coal Co.; 251 Federal Reporter, 743.)

RIGHT TO FORFEIT COAL-MINING LEASE—Where defendant coal company violated the terms of a lease held by it by failing for five years to develop a mine, the leasing land owner was entitled to maintain suit to cancel the lease. But the right to forfeit a lease in such cases is subject to waiver. So, the lessors, by subsequently treating the lease as still in force lost the right to enforce a forfeiture against the lessee company after it proceeded toward development work in good faith, and avoided further breach of the contract. When two or more persons own land in undivided interests, and make a joint lease of the entire tract, they become partners in the sense that one of them in writing a letter, leading the lessee to believe that no forfeiture of the lease will be insisted upon because of a delay in commencing actual mining production, binds all the owners. (Arkansas Supreme Court, Schmidt-Blakeley Coal Co. vs. Hembree & O'Kane, 205 Southwestern Reporter, 111.)



Year's Work of Bureau of Mines

Summarizing the year's work done by the Bureau of Mines, Van H. Manning, in his report to Congress, mentions the following results from the bureau's accomplishments in matters pertaining to coal mining:

Tests of a new method of signaling danger to miners underground by the injection of an ill-smelling substance into the compressed-air lines supplying mining machines and pumps have given promising results.

Surgeons of the Public Health Service detailed to the mine safety cars of the Bureau of Mines have surveyed sanitary conditions at more than 150 mines, smelters and mining towns, suggested improvements, and given talks on health and sanitation.

Tests of explosives to determine their suitability for use in mines and quarries were continued. Three new explosives were approved as permissible for use in dusty or gaseous coal mines, and six more were added to the list because of their being similar in all respects to explosives already on the permissible list. At the end of the year there were 160 explosives on this list.

An explosive made of liquid oxygen mixed with carbonaceous material was tested for its value in coal mining.

A new station for testing explosives was erected at the experimental mine of the bureau, near Bruceton, Penn., and methods of analyzing explosives were improved.

Coal-mining methods in Oklahoma were studied with reference to the prevention of waste in coal mines on Indian lands.

In coöperation with state mine inspectors, monthly reports on fatalities at coal mines throughout the country were printed and distributed.

Studies of the combustion of fuel and the baffling of boilers were made in connection with boilers for the Emergency Fleet.

In coöperation with the Bureau of Standards, the Roberts byproducts coke oven was tested to determine its commercial worth.

At the request of the United States Fuel Administration, coal mines in Arkansas and Oklahoma were examined and sampled.

As a result of representations made by the Bureau of Mines, Congress authorized the establishment of a Government coal yard, or yards, in the District of Columbia, whence all Federal buildings will be supplied. This yard will be under the supervision of the bureau.

An electric flash lamp, which should be an aid in mine rescue work, was approved for use in explosive mixtures of mine gas and air.

During the year 8851 miners were trained in first-aid and rescue methods at the bureau's mine safety cars and stations as compared with 4828 in the fiscal year 1917.

Causes of 38 mine accidents, 30 in coal mines and 8 in metal mines, were investigated.

The Gibbs breathing apparatus for protecting men from poisonous or irrespirable gases was further developed by the bureau. In coöperation with the Engineer Corps of the Army, arrangements were made for its manufacture for supplying the mining and sapping regiments, and for commercial sale. Six hundred sets were manufactured during

the latter part of the fiscal year and manufacture on a large scale continues.

A large number of coal mines were sampled for the Navy Department, and reports were prepared on the quality of coal and the methods of mining and preparing it for market.

Further tests of the explosibility of coal dust from different mines have given additional information on how coal mine explosions can be prevented or limited.

George Otis Smith, the Director of the Geological Survey, makes the following statement in his annual report to Congress:

To meet the regular needs of the War Industries, Shipping, and War Trade boards and the Fuel and Railroad administrations, as well as special inquiries of the General Staff of the Army, the Ordnance bureaus of the Army and Navy, and the Tariff Commission, increased attention has been given to quarterly, monthly and weekly reports of mineral production. Even daily reports on coal shipments are compiled, and in the support of the Survey's coal statistical work the Fuel Administration has largely coöperated.

As a further contribution to the problem of meeting the Nation's fuel requirements, the hydraulic engineers of the Survey are engaged in a country-wide survey of the power situation to determine where water power can be substituted for steam-generated power or where coal can be saved by interconnecting electric plants or systems.

Instruction Station Arouses Keen Interest

Splendid results are being obtained, it is believed, from the instruction station for householders which the Fuel Administration is conducting in Washington. Keen interest is being taken by a large number of visitors anxious to learn how to operate their heaters and ranges so as to get the best results from the least amount of coal. A similar station is to be established in Detroit. Others will be started in cities that will be designated by the state fuel administrators.

Senate Investigation Committee to Visit Hard Coal Regions

That the Senate Committee on Manufactures expects to make a personal inspection of the anthracite coal fields is shown by a resolution introduced in the Senate by the chairman of the committee. The resolution reads:

Resolved, That the Committee on Manufactures of the Senate be, and it hereby is, authorized and instructed to make inquiry into the coal situation, its production, transportation and consumption.

Resolved further, That the said committee, or any subcommittee thereof, is hereby empowered to sit and act during the session or recess of Congress, or of either House thereof, at such time and place as it may deem necessary; to require, by subpoena or otherwise, the attendance of witnesses and the production of papers, books,

and documents; to employ stenographers, at a cost not exceeding \$1 per printed page, to take and make a record of all evidence taken and received by the committee and keep a record of its proceedings; to have such evidence, record, and other matter required by the committee printed; and to employ such other clerical assistance as may be necessary. The chairman of the committee, or any member thereof, may administer oaths to witnesses. Subpoenas for witnesses shall be issued under the signature of the chairman of the committee or subcommittee thereof.

Senator James K. Vardaman of Mississippi has been made chairman of the committee. Senator Reed, the former chairman, has been transferred to the chairmanship of the Committee on Public Buildings and Grounds. The change in chairman will make no difference in the prosecution of the coal hearing now in progress.

Coal Exports for October

Exports of coal, in tons, as reported by the Department of Commerce, for October, 1918, and the figures for October, 1917, as finally revised are as follows:

	October, 1917	October, 1918
Anthracite.....	478,317	456,029
Bituminous.....	2,615,526	1,888,801
Exported to:		
Italy.....	31,094	None
Canada.....	2,157,857	1,660,229
Panama.....	94,681	17,605
Mexico.....	11,618	19,186
Cuba.....	117,615	89,941
Other West Indies.....	22,173	12,064
Argentina.....	29,374	None
Brazil.....	41,707	38,461
Chile.....	None	36,402
Uruguay.....	6,776	13,832
Other countries.....	102,631	1,081
Coke.....	114,013	118,796

As usual, there were no appreciable imports of coal from any country save Canada. In October, 1917, the imports from Canada were 130,680 tons and in October of 1918, 133,722 tons.

Recent Zone Modifications

Zones F-1 and F-2 have been modified so that coal from all operations along the Louisville & Nashville railroad in eastern Kentucky may move to all points in Indiana located on and east of the Chicago, Indianapolis & Louisville railroad. Such coal, however, must be used for industrial purposes only, but it may move to all points on the lower peninsula of Michigan without restriction.

Rembrandt Peale Resigns as Commissioner to the Tidewater Coal Exchange

Rembrandt Peale, one of the most prominent coal operators of central Pennsylvania, has resigned his position as Commissioner to the Tidewater Coal Exchange, effective Jan. 1. The Tidewater Coal Exchange is a pool of all coals shipped to tidewater ports of Hampton Roads, Baltimore, Philadelphia and New York City, and is one of the most effective measures for saving transportation taken during the war period. The chief offices of the Tidewater Coal Exchange were in the Woodward Building, Washington, D. C.

Mr. Peale has also presented his resignation as advisor and as director of the Bureau of Labor to Dr. H. A. Garfield, to be accepted at the pleasure of the Fuel Administration. Mr. Peale was one of the first men in the Fuel Administration. His long services there commanded the highest regard and respect everywhere.

His administration jointly with John P. White of the Bureau of Labor was the greatest single factor that contributed to the final success of the Fuel Administration. Mr. Peale has earned the gratitude of miners and operators everywhere by his work at Washington during this period.

J. W. Howe, who has been assistant commissioner of the Tidewater Coal Exchange, has been advanced to the post of commissioner.

Placement of Army and Navy Men

Employers seeking university graduates in mechanical, electrical and civil engineering, and in chemistry, and other technical men with several years of practical experience, are invited to make their wants known to the Professional Division of the United States Employment Service, 16 East 42d Street, New York, N. Y. Employers seeking such men are asked to inform the Division of the precise nature of the positions available, as there are a number of thoroughly equipped officers and men in the Army and Navy service who are qualified for responsible positions. The record of each man is carefully investigated before registration is permitted, and only men well fitted for the positions to be filled are sent to employers.

Brief Washington Notes

Coal-saving slogans put out by the Fuel Administration are being used in moving picture theaters as a part of the program to conserve domestic sizes of anthracite coal.

Shipment of 100,000 tons of coal to Holland has been authorized by the War Trade Board. The coal is to be transported on Dutch vessels, which now are lying idle in Dutch harbors.

To do away with certain confusion due to separate orders, the Fuel Administration has codified Virginia coal prices. No changes have been made in the prices or in the boundaries of the district.

At the special request of the President, Dr. Harry A. Garfield is holding himself in readiness to go to Paris to advise with the American delegation to the peace conference in matters pertaining to fuel.

Coal stocks being held by the Army are reported officially as being 1,190,193 tons of bituminous and 235,497 tons of anthracite. There is no intention of putting any of this coal on the market at present.

With the passing of any further difficulties in the fuel situation in Utah and southern Wyoming the assistant district representatives in those areas have closed their offices. Moroni Heiner, of Salt Lake City, the district representative, will look after such matters as ordinarily would have been handled by the assistant representatives.

Many letters are being received at the Fuel Administration urging the continuance of its Bureau of Statistics. Dr. Garfield has recommended that this work be continued under the Geological Survey. The matter, however, is one which must be passed upon by Congress, as the Survey's present appropriations would not permit of the carrying out of such an elaborate statistical program.

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

There is still a disposition in the anthracite region to find fault with Dr. Garfield's decision as to the wage increase of the mine workers, especially in the Wilkes-Barre section. The objection is not so much to the scale provided as to the date from which that scale is made to be operative. The mine workers wanted a scale, markedly retroactive, to take effect Oct. 1. Instead a scale was granted which became operative on the day of announcement.

The trouble-making seems to be a clever trick of the insurgents to disturb the union fold. It is a matter of internal politics. The election may be expected to end the unrest by ending the political advantage which may be expected to come from its continuance. When it can no longer disturb the tenure of office of the officials in control we may expect that we shall hear no more regarding the dissatisfaction.

Still about this we shall do well not to be too sure. Trouble may be started for political motives and continue after the possibility of political advantage may have come to an end. On Dec. 7, 500 delegates, representing 30,000 mine workers of District No. 1, of the United Mine Workers of America—a district extending from Forest City to Shickshinny—met at Wilkes-Barre and unanimously declared the agreement negotiated through the Federal Fuel Administration unsatisfactory.

CONVENTION BY DEC. 28 OR ANTHRACITE STRIKE

This meeting urged that a tri-district convention of Districts 1, 7 and 9—constituting the whole unionized anthracite region—be called, Dec. 26, in the hope of securing a more satisfactory wage award. The meeting was stormy, and the delegates so worded their resolution as to provide for a cessation of work on Dec. 28, if their demands for a convention are not recognized. Another meeting is to be held in Wilkes-Barre on that date.

The contract miners do not like the Garfield award. They grumble that they were not given an increase of 15 per cent. on the 1917 scale. They receive 40 per cent. on the scale of 1916, and as the 1917 scale conceded 25 per cent. on that scale, the increase from the scale of 1917 to the scale of 1918 only figures 12 per cent. The contract miners would have the increase made 15 per cent. on the 1917 scale.

Of all the men in the northern anthracite region the Plymouth men are loudest in their protests. They have even been discussing a strike to enforce their demands, and the unrest has already actually caused a strike at one plant. A footman had damaged some property and been discharged, and the men, thoroughly worked up over the larger matter of retroactive payment, went on strike for several days. Eventually the matter was amicably settled.

MUST TAKE BACK MUNITION MEN "SIGHT UNSEEN"

Thomas Kennedy, of Hazleton, district president of the United Mine Workers in the seventh anthracite district, alleges that the operators will not hire all the returning workers, but will "pick only the desirable ones," a policy which Kennedy says the mine workers will bitterly oppose.

The mine workers in the ninth, or Schuylkill, region at their annual session increased the salary of their officers 50c. per day from Dec. 1, 1917. They also urged that the Franklin B. Gowan Beneficial Fund, which was collected in part from the miners by the Philadelphia & Reading Coal and Iron Co., be used for the care of children orphaned by the recent epidemic. The Gowan fund predated the passing of the compensation act, and it is said that about \$100,000 was on hand when the compensation act came into operation.

The fall of the tonnage in the anthracite region still occasions much anxiety. We are assured that 1017 anthracite mine workers will shortly be relieved from the army. There were 153,092 mine workers in the anthracite region in Apr. 1, of this year. Just how many there are now would be hard to determine, but assuming that the April force was maintained unchanged the addition of 1017 would add only 0.66 per cent. to that number. At best 1 per cent. is the gain to be expected. If these men go back quietly to their work in the mines without celebrations they will add between $\frac{1}{2}$ and 1 per cent. to the output. If, however, there is much jollification by the other 100 per cent., the addition will really not result in increased tonnage. Reports from Camp Benning, Columbus, Ga., show that there are 9 anthracite workers to be discharged at that point. From Camp Johnston, Jacksonville, Fla., it is reported that 48 available hard coal workers are quartered there. Camp Greene, Charlotte, N. C., has 203, and Camp Humphries 17. With 690 men listed for release, under surveys previously announced, this makes 1017 men.

WAS FORMER DU BOIS PRESIDENT UNPATRIOTIC?

In central Pennsylvania the election seems to show that the old leaders have been discredited, a strong campaign having been conducted by the insurgents based on the alleged lack of patriotism shown by the circular of Aug. 26, which condemned the power given to the district manager of coal production, the secretary of the Coal Producers' Association, to act as the arbiter in cases covered by the scale agreement.

In consequence out goes John Brophy, of Nanty Glo, former president, and in goes Frank E. Waite, of Du Bois, former subdistrict president. "On official tabulations of 130 of the 200 locals," says the *Du Bois Express*, "including locals showing strong support both to Waite and Brophy, give Waite a total of 6870 votes and the incumbent 2907. It is believed in Clearfield that final returns will show Waite a victor by about 3500 votes."

The vice presidency seems likely to fall to William McEwan, of Brisbin, as he leads James Mark, the present holder of the office, by about 3000 votes. William Donaldson, of Du Bois, seems surely to have been elected international board member.

BITUMINOUS MINERS STILL WANT WAGE REVISED

The bituminous mine workers are exhibiting restlessness everywhere. They still want an increase in wage proportional to that granted the anthracite mine workers. The mine workers keep inching upon one another. The anthracite region gets an increase because the bituminous region has the bigger pay; then the bituminous region must have an increase because the anthracite region has been conceded one. It is time to call a halt. If there are to be any increases they must go to the peace-industry workers who have been as peaceful as their industries and have received no increases. As has been truly said, strikes are not between capital and labor, but between worker and worker. It is time for the peace worker to strike against the war worker who has been continuously impoverishing him by raising his cost of living. The peace worker has a right to live and keep warm without paying a prohibitive price for coal.

On Dec. 11 a mass meeting was held at Charleroi, near Pittsburgh, Penn., at which it was decided to hold a special convention to which delegates from the locals of the United Mine Workers would be invited, the purpose being to seek a wage increase. The meeting was presided over by Thomas Metcalf, of Findleyville and William Deiler, the candidate for national board member at the general election

held during the week. District President John H. Walker, who heads the mine workers in the Pittsburgh district, told the men why, in his opinion, they were entitled to more wages.

The influenza is still a factor in the bituminous mines of Pennsylvania. It is thought that the tonnage has dropped between 80 and 90 per cent. due to the epidemic.

ROARING CREEK MINERS SEEK WAGE INCREASE

The West Virginia mine workers have only just become unionized. The union is a new toy to be brought forward on every occasion. What good is it unless it furnishes an excitement every minute! So the war being over West Virginia is experiencing a lot of strikes. In the Roaring Creek fields, near Elkins, W. Va., the miners made a demand for an increase in wages to be granted Dec. 2. When that day came they struck. The mines from Belington, in Barbour County, southward to Mabie in Randolph County, ceased operation together. The plants of the West Virginia Coal and Coke Co., the Jenkins Coal Co., the Randolph Coal Co., and the Spates Brady mines were closed down.

Some of the largest producing mines of the West Virginia Coal and Coke Co. are in the strike territory. The managements of the various companies claim that under the regulations promulgated by the United States Fuel Administration they are without authority to increase wages and that there is no prospect of settlement unless either there is a change in the policy of the Fuel Administration or the miners abandon their demand for an increase.

Up to Dec. 12 there had been no settlement of these strikes except at one mine, the Junior mine of the West Virginia Coal and Coke Co. However, no sooner had these men gone back to work than a strike occurred at the mine of the Gage Coal and Coke Company.

Just north of the strike area described is the Boar Run mine at Philippi, Barbour County. The men at this mine struck Nov. 28, and up to Dec. 4 had not returned to work. As result of a meeting held at Scarbro, Monday, Dec. 3, despite the recommendation of President Gilmore and other union officers, over 2000 mine workers employed at the 15 operations of the New River Co., on Loop and White Oak creeks, quit work on Tuesday, Dec. 3. All the men, including the pumpers, left their posts.

The grievance of the miners relates to the payment of the extra \$1.40 a day which the Federal Fuel Board awarded to the miners. The miners claim the company has been dilatory in making settlement under this award, and in some instances has not paid the full amount that is alleged to be due to the miners.

Carpenters and others employed by the month about the mines claim that they should share in the award of extra pay. The operators claim that only the day men directly employed in the production of coal are entitled to this extra money. This point was recently presented before Judge Allison Smith of the arbitration board. He declared in favor of the complainants. The operators were not represented at the hearing and for this reason Judge Smith granted them a rehearing.

WANT PAY FOR WORK THAT THEY NO LONGER DO

This strike, like the Roaring Creek difficulty, shows no sign of being settled. It has even spread to the mines of the Brown Coal Co., in South Nurrall, Fayette County. The men at this mine have gone on strike to get pay for placing cars at the room face, though the company actually places the cars. An extra allowance of 10c. a car was at one time given the miner for each car placed at the room face. When the company began placing the cars the men did not object to the company's activity but objected to losing the pay that the company had paid for the car placing.

Some of the wages paid at the mines of the United States Coal and Coke Co. prove that it pays to be a mine worker. Bosco Spittisch, a coal loader, made \$92.07 loading coal the week before last. He worked 6 days. Dock Smith, colored, a cokeyard man also working 6 days made \$60.29 pulling coke. Frank Boots, a Pole, a machine runner, made \$72.40 cutting coal in the same 6 days. Peter Vuncrivch, a driver made \$35.11 in 6 days.

Out of curiosity we have multiplied these numbers by 52

and we find the Serbian apparently earned at the rate of \$4787.64 a year, the colored man, at the rate of \$3135.08 a year, the Pole at the rate of \$3764.80 and the driver, of nationality unspecified, \$1825.72. With such wages these men are surely well entitled to be content.

C. F. Keeney, president for district No. 17, has been absent from Fairmont. His work has been directed by H. P. Peters. He is candidate for reelection and that is conceded to him for he had no rival candidate. Fred Mooney, the secretary in the same district, has undoubtedly been re-elected. James R. Gilmore, the candidate for reelection in district 29, was likewise unopposed.

The Grafton Coal Operators' Association in Northern West Virginia is determined to stamp out the bonus evil. On Dec. 12 a meeting was held at which it was decided to take up the matter with the United States Fuel Administration through the National Coal Association.

SCALE FOR DEADWORK IS STILL UNSETTLED

On Nov. 29 a preliminary meeting was held at Fairmont, W. Va., between the operators' committee and the officers of the United Mine Workers of District No. 17. C. H. Tarleton, A. C. Beeson, L. J. Sandridge, C. J. Ryan, J. A. Clark and John M. Wolfe represented the former, and C. F. Keeney was the leading participant for the United Mine Workers. The discussion was as to "deadwork," that is, pay for work not actually involving the production of coal. A general meeting of the Northern West Virginia Coal Association will be called to give the tentative agreement, when made, final approval.

The Fairmont region in West Virginia is again a victim of influenza. The Clark mines in Harrison County have a number of cases and about half the employees of the Tucker mine of the Orr Coal Co. are afflicted with the disease. Adrian, on the Coal & Coke R.R., is so badly smitten that the local physicians and nurses found it impossible to cope with the large number of cases. Outside assistance was sought.

The Kanawha and Pocahontas districts are similarly affected. The Kanawha & Hocking Coal Co. had to appeal to the State Health Department and so did the Superior Coal Co. at Davy in McDowell County. Similar reports come from Kentucky.

In Kentucky great union activity is being exhibited in the Big Sandy River region under W. M. Peters, the vice president of District No. 17. The drive, the mine workers hope, will net 20,000 members. In Illinois, Frank Farrington, president; Walter Nesbitt, secretary, and Harry Fishwick, treasurer, the administrators of the past term, have been reelected to their former official positions, according to official advices.

PARKER ALLEGES JUDGE ELLIOT WAS COERCIVE

Alton B. Parker, of New York City, is counsel for the mine workers in their appeal against a judgment requiring them to pay \$720,000 for triple damages and costs in the matter of the suit of the Coronado Coal Co. It will be remembered that in the Federal Court of the Western Arkansas district at Fort Smith, Ark., judgment was given the coal company for \$200,000. Trebling this and adding \$120,000 for costs, it will be seen, brings the bill to \$720,000. The mines of the company are in Sebastian County.

Parker, in his argument, laid his greatest emphasis on Judge James D. Elliot's supplemental charge to the jury. This charge he held to be coercive and purposed to bring about a verdict for the mining company. The charge was delivered after the jury had failed to agree and asked to be discharged. In it the judge gave the jurors to understand that they would not be released from duty until they had reached a verdict.

This was coercive, he argued, because the trial had occupied a month and the jurors were anxious to be released. Parker also objected to this language of Judge Elliot: "You are advised that the court is of the opinion that the facts in this case overwhelmingly justify you in the conclusion that it was the policy, and therefore the agreement for years of this national organization, to prevent mining of nonunion coal. There is no question in the court's mind but that the strike was ordered to prevent this."

Give the Foreigner Your Hand



*—AND SEE AMERICANISM BREAK OUT
ALL OVER HIM LIKE A RASH.*

COAL
AGE

We proclaim Americanism as a great gift. Then let us bestow it on the stranger with all the good will we express when we give a Christmas present. Let him know that it is his, from the cordiality of our smile, the heartiness of our handshake and the warmth of our good wishes.

EDITORIALS

May We Show the Warrior a Seat?

EVERYONE is anxious to see the mining men now in the Government forces get back into positions just as good as, if not better than, those they left when they prepared themselves to make the supreme sacrifice and started for camp and the front. Times are perhaps not entirely opportune for men to be looking for new positions, for the energy of production has somewhat spent its force. Still the fewer the places the more diligently they must be sought.

We are willing to help in that search. We have a "Positions Vacant" column in which we shall be willing to run free for four issues the advertisement for a position of any men released from service in the United States Government forces. We desire to know in each instance whether the applicant desires to receive a direct reply or would prefer that it be sent in care of *Coal Age*, to be forwarded without charge. The branch and unit of service from which the advertiser has been released should be given when forwarding copy, which item of information will serve as a credential.

Our International Flag

NO NATION can succeed that does not at times use violence in its defense and force to back up its beliefs. But neither can any nation succeed by force alone. For this reason, we may perhaps find in the future that the principal gain in the Great War was the outcome of our moral and not of our physical forces; and this came largely from the activities of the Red Cross and kindred charitable undertakings, more active in this war than in any other.

The reputation of no nation can rest in security solely on its record for bravery and success in war. A record of liberality is a far safer ground for honor, and it was our happy task to exhibit both bravery and liberality during the advance of our armies under the national banner and the banner of the Red Cross.

In their work the Red Cross officials want the backing of all America. They want a gift of one dollar from every man, woman and child from Carysford Light, in Florida, to the light on Tatoosh Island, in Washington. The hope and expectation is that the people individually will put themselves behind the great altruistic endeavor of the Red Cross, not alone that the noble purposes of that organization may be financially supported, but so that in all the work the officials do they may be able to declare that it is the whole manhood, womanhood and childhood of America that furnishes their work with its support.

A league of nations has once again been urged upon the public, as it has been time without number in the his-

tory of the world. It will involve for all nations a lot of self-denial. At heart we are all Tories and believe that an autocracy, with ourselves as the autocrats, would be better than any democracy that could be imagined. Therefore we, as nations, one and all approach any proposition for an international league with reservations. We reserve this and that, each for ourselves, as being something not safely left to the judgment of a congress of nations, because such a congress could not possibly, we feel, view these private matters of ours as rightly as we can.

But whether we have a league of nations or decide that such a league involves a greater sacrifice than we are willing to make, and more faith than we are possessed of, nevertheless we can, as individuals, break through the hard shell of our national environment in the generous work of the Red Cross. The Red Cross is truly international, and for all the earth its flag is an emblem of international sympathy and world-service.

In it is reflected all that is best and noblest in our character, all our benignity, self-sacrifice, humanity, intelligence and comprehension. That being so, membership of the Red Cross by us all, each individually, is a symbolic act of attachment to the best and truest in our international life, is a sign that our hearts are ready for union if our governments are not.

Germs Linger After Influenza Leaves

INFLUENZA is by no means at an end. A recurrence of its attacks is reported almost everywhere. Influenza may be like typhoid fever, which is also a germ disease, in that the germs of it may still be carried by those who have suffered from the disease long after they have become immune to its toxic effects. Such people should be extremely careful not to infect others. They should never relax any of those precautions which they felt it was necessary to take to protect others when still suffering from the disease. While it may not be true that the formerly afflicted continue to be a danger to the community, the probability is so great that no chances should be taken. Sanitary isolation is not so difficult or expensive that it cannot be persistently adhered to. Patients who are getting well seem utterly disregardless of the fact that while the germs have lost the power to hurt their first host, they may be as able and as active as ever to invade the organism of another host.

Four-minute men are needed urgently for service in stemming the disease. It should not be considered a mistake to call meetings for health propaganda, at least in the open air. At these meetings the life story of a germ might be told, tracing its passage by means of a towel, a cup, a wash bowl, a pillow slip, a cough or a



sneeze, from one victim to another. Sanitation is somewhat laborious and expensive; able and persevering must the four-minute man be who will induce the workman and his good wife to take the needed precautions. If a miracle-working drug which would defend the taker against influenza cost \$100 a person, it might be possible to get everyone to buy it; but the admonition "Wash and be clean" is a less pleasing, and a bothersome way of meeting the difficulty, and it is hard to make the public accept it. It is not easy to convince the average person that almost none of us are free of faults which should, from a physiological standpoint, be labelled grossly uncleanly.

What the Public Does Not Know

WE WONDER, with justice, how naturalized foreigners who do not know the first thing about civics, the constitution, history and what not can vote with intelligence on American governmental policy. But when we think how little people in general know about coal, we are just as much justified in wondering why they consider themselves able and ready to regulate its production, distribution and consumption.

There is the Mayor of New York, for instance. Discovering a pile of buckwheat anthracite, he said he was going to see why the "poor" could not burn it. (Why impose it on the poor?) There, too, was the man who argued boldly that no matter what might be said, anthracite small sizes were in great demand in Baltimore. This same man, on being questioned as to the way in which he knew there was a shortage of small sizes, said that he had ordered coal for his own household furnace and had only received half of what he ordered. He finally explained that he wanted nut coal, and that in his belief nut was a "small size."

So it goes all along the line. The public doesn't know anything about coal. It can't understand that small sizes are what it calls "dust," and even "dirt." It does not understand that small sizes are always part of the product of every mine. There are those that believe there are chestnut mines and egg mines, and that when there isn't enough chestnut it is because the cruel coal baron has the chestnut mine locked up and hasped, and has wedged a rance securely up against the door.

The consumer does not know that one quarter of all the anthracite mined is buckwheat coal, of varying degrees of fineness; that another 10 per cent. is pea, for which the consumer is even now only just acquiring a tolerance. Thus as much as 35 per cent. of the fresh-mined coal the domestic consumer really doesn't want. But it has to be mined. However, by diligent coaxing, the operator gets most of his 35 per cent. on the market at a cut rate. Of the other 65 per cent., 25 per cent. is nut, 20 per cent. is stove, 15 per cent. is egg and the rest "broken."

Every now and again some tribune of the people hears of a deposit of coal containing some millions of tons. This coal is already being mined at the utmost speed possible under the conditions obtaining, but the tribune of the people believes that if he were down there he could put those millions of tons aboard cars in a week at some impossibly low price. If

the public understood the true conditions he would be laughed at. The people would not be so gullible; there would not be so many bewildered misleaders to guide them headlong to the ditch.

Much has been learned during the recent shortage about the conditions environing coal production, and the public is beginning to understand also the possibilities of utilizing domestically other fuels than large size anthracite. But there is much work remaining to be done. Some of us forget that there are hosts of people in the Eastern cities who don't believe that bituminous coal can be, and is, used for domestic purposes. Misconceptions of the plainest facts about coal are common, but one finds it hard to scheme a way to enlighten the voting public. If their only lack were in their knowledge of coal it would be easy, but there are so many matters in which they need new light and so many industries of the nature of which they have only the faintest of inklings, that the work of their enlightenment seems endless.

However, we shall have to rely on their judgment such as it is. They decide the laws and regulate the national policy. If there is a way of making them understand and qualify for the job that they must perform, that way is surely worth the finding.

Keep Iron and Wood Out of Coal

IMPURITIES in coal which reduce its efficiency are trying enough, but other impurities like hardwood caps and pieces of iron (pit-car links, pins and swivel couplings) not only dilute the coal and so give it less thermal efficiency than it should have but do damage to automatic stokers. We have been asked by a member of the Fuel Conservation Division of the Railroad Administration to draw attention to this difficulty.

We can the more readily do it because the operator is partly to blame and we have in these columns an unequal opportunity to appeal to him. Where pit cars are leaky, the miner can do nothing else than use a cap piece to correct the trouble. Poor doors and broken bottoms sometimes need a temporary repair. The cap is handy and is used for that purpose.

As for the car links, pins and swivel couplings, they are not shipped from malice aforethought. They are thrown on the car by the driver merely for use when needed. Drivers, like other men, sometimes forget to pick up what they lay down, and the iron then goes into the car with the coal.

Then, again, the railroad itself is sometimes to blame. Its cars, like those of the operator, at times need patching and the cap piece is used for that purpose, rightly so it seems to us. However, no one has worried much about these matters hitherto because a piece of wood or of iron did little harm with hand-stoking. As times have changed, it is necessary to call attention to the importance of avoiding shipment to market of material in the coal which in the use of that fuel may damage

machinery. The loaders beneath the tipple should always be instructed to clean out the railroad cars before loading them. When, however, several inches of frozen material are found in a car, it is often a question to determine what should be done.

The Call of Humanity

is "Join the Red Cross"

DISCUSSION BY READERS

Zoning System of Coal Shipments

Letter No. 1—I have been greatly interested in the numerous references made in *Coal Age*, regarding the zoning system adopted by the Fuel Administration regulating the shipment of coal. It is unnecessary to state that the zoning system, which was made necessary during the war crisis, has since become a matter of deep concern to coal operators in certain districts. Our own experience in this regard is by no means exceptional.

Allow me to say that our company is operating a mine located at Bream, W. Va., and shipping on the Coal & Coke Ry., at that point. Since the war started, we have spent more than \$50,000 for modern equipment, which enabled us to increase our output as urged by the Government to help win the war.

The practical effect of the zoning system is to limit the sale and shipment of coal outside of the limits of the zone in which a particular mine is situated. Since Saturday, Oct. 23, it has been our misfortune to have no orders in the zone prescribed for shipment from our mine; and, as a result, the mine has been forced to lie idle for more than a week.

ZONING SYSTEM RESTRICTS TRADE

The fact is that the states embraced in our zone of shipment are oversupplied with coal, while other states where there is a large demand for West Virginia coal can get none of our product despite their frantic efforts to do so. It happens that West Virginia coal is suited for their particular purpose better than the grade of coal that they have been and still are obliged to use because it is mined in the zone in which they are located.

Our sales agents inform us that they have orders for coal in Indiana and the East, where they could place all our present and future output, as quickly as mined. In common with all the coal operators in West Virginia, we have considered it a patriotic duty to conform in every respect and to comply cheerfully with the rules of the Fuel Administration made to better the movement of coal during the war.

Is it, now, too much to ask for the powerful protection of the same Fuel Administration during the present period of readjustment? Do not the principles of readjustment of economic conditions, following the war, call for the unrestricted shipment of coal to points where operators have urgent orders for their product?

It is only justice to state, here, that coal operators are losing, and will continue to lose, large amounts of money if the restrictions of the zoning system are to continue in force while the demand for coal has shrunk, in some zones or districts, to such an extent that our mines are idle. At the same time, the country loses the output of these mines and the coal industry is sadly handicapped because of the inability of operators to ship their output where it is needed.

Our operators, relying on the impartial judgment of the Administration, and their spirit of justice, firmly believe that permission will shortly be granted them to move their coal to points in other zones where they have urgent orders waiting to be filled.

It is for the purpose of inviting a free discussion, in the columns of *Coal Age*, that I have written this letter, hoping that such a discussion will serve to draw the attention of the Fuel Administration to existing conditions and the need of reconstruction in respect to the shipment of coal from mines, which is a fact that is absolutely necessary to maintain the healthful growth of the coal industry in the country.

ERNEST B. DE LIGNY, Pres.,

New York City.

Empire Coal Mines Co.

Air-Cylinder Lubrication

Letter No. 2—In looking over some of the recent issues of *Coal Age*, my attention was attracted to the inquiry of an engineer who had experienced trouble in the lubrication of the air cylinder of his compressor, and asked to be informed in regard to the best lubricant to use for that purpose. I have had some experience in the lubrication of cylinders and can appreciate the correspondent's situation fully.

Although everything stated in the reply to this inquiry is quite true, I was surprised to find that the writer omitted to mention one of the best air-compressor lubricants manufactured or used. I refer to flake graphite, which has no equal as a lubricant not only in air-compression practice, but likewise for steam engines, gas engines, journals, valves, and, in fact, wherever a lubricant of superior quality is required.

LUBRICATING QUALITIES OF FLAKE GRAPHITE

Flake graphite possesses the peculiar properties not found to the same degree in other lubricants. For example, its structure is such that it fills up or overlays the roughnesses of metallic bearing surfaces. As is well known, graphite has a strong tendency to attach itself to a metal surface and quickly imparts to it a superficial glaze that almost eliminates friction.

Again, used as a lubricant, graphite is not only more enduring than oil, but possesses the important feature of withstanding high degrees of heat. It is this feature particularly that adapts it to the lubrication of air-compressor and gas-engine cylinders, where the heat is sufficient to volatilize or carbonize oil and render it useless as a lubricant under such conditions.

Everyone who is familiar with the operation of air compressors or gas engines freely admits that oil has many disadvantages that render its use inefficient and often harmful. The use of graphite for the purposes named would have become universal long since had it not been for the difficulty encountered in introducing the graphite into the engine cylinder.

That difficulty, however, is more imaginary than real. Special devices have since been made for automatically feeding flake graphite into cylinders and on all bearing surfaces that must be lubricated. One of these devices is known as the Winans Dry Graphite Lubricator; another, Johnson Graphite Lubricator. It is claimed for each of these that from 50 to 60 per cent. is saved in the cost of lubrication, by the use of graphite instead of oil.

In my own practice, I have been using Dixon's Ticonderoga Flake Graphite for the lubrication of air-compressor and gas-engine cylinders, as well as on other moving parts, in all classes of mechanical equipment. Permit me to name a few of the advantages I have found that graphite possesses over oil when used as a lubricant. They are as follows:

Graphite, in lubrication, (1) is unaffected by high temperatures; (2) cannot be carbonized or ignited; (3) cannot give off explosive vapors; (4) does not clog discharge valves; (5) will not accumulate dust or grit; (6) enables a large saving in cost of lubrication; (7) avoids danger of explosion in air-compression practice.

Last, but not least, I have found that the use of graphite in cylinders improves the fit of the piston, while at the same time reducing friction, making repairs less frequent and saving trouble and expense.

Paterson, N. J.

ANOTHER ENGINEER.

Efficiency in Firebossing

Letter No. 1—In reading some of the recent articles that have appeared in *Coal Age*, where references have been made to the treatment of firebosses, I have wondered whether any of the mining men who have struggled from the bottom to the top, via the fireboss route, have experienced the same feeling that I have when they see such statements as sometimes appear in print.

It is hard to find words that rightly express my sentiments at the time of reading some of the fireboss' duties in different states. The words "from the sublime to the ridiculous" flit through my mind, although they do not fully convey the impression made. My feelings are similar to those a man experiences when reading a good cartoon in *Life* or *Punch*. First comes the pleasure the cartoon excites; then follows contempt mingled with sadness when one reflects on the true situation.

UNDERRATING THE STATUS OF THE FIREBOSS

Undoubtedly, each of the coal-mining states have different conditions with which the fireboss must contend, and his status will naturally vary with these conditions. While, in some states, he is rightly regarded as a mine official and treated as such, in other states he is a combination of a mine examiner, coal digger, timberman, or trackman, as the case may require.

Although my experience is varied, having been gained by travel and work in many mining countries, it would be presumption on my part to comment on the practice in any one state, without knowing the exact conditions in that district and state. However, when I read of a mine foreman putting his fireboss to work digging coal, laying track, or timbering haulage roads, it is evident to my mind that the foreman is off the track, all wheels.

As in other trades, success in mining is primarily due to organization and, to obtain this, it is necessary to

have efficient officials and mutual confidence. Let me ask, Is a foreman who puts his fireboss to work to dig coal, or to lay track or switches, proceeding in a manner to develop the highest efficiency in the particular work that fireboss must do each day? Is the foreman doing his duty to the company or to the fireboss? Does he not, rather, undermine confidence and destroy ambition?

To my mind, a man who spends two-thirds of his time digging coal would be a poor man to put in charge when the emergency arises calling for higher duties. My claim is, then, every mine official must perform his work conscientiously. The foreman should teach the man under him to take his place and act for him in his absence, while at the same time the foreman should prepare himself for assuming higher duties when the opportunity offers. It is a mistake for a foreman to run a mine in such a manner that the loss of any one man would prove a severe blow to the efficient operation of the mine.

Frequently, the fear of being supplanted in his position will keep a foreman from training men under him so that they will be able to take his place. When the fireboss, in the early days, went about the mine burning out the gas before permitting the miners to proceed to their work, there was little cause for jealousy and few men were ambitious to assume the duties of that position. Today, however, there should be every incentive to ambition and mine officials should strive continually to foster that ambition in the men working under them. No foreman should attempt to run a difficult and dangerous mine with the organization of the "mine-examiner-coal-digger principle." Such an attempt will only prove a failure. A poor foreman with a good fireboss under him will often pull through; but a good foreman with poor firebosses under him stands a poor chance for success.

DANGERS AND RESPONSIBILITIES OF THE POSITION

The fireboss should be, and is, in many mines and in many respects, as important as the foreman. It is the fireboss whose duties call him to enter the stygian darkness of the mine at an ungodly hour and face unseen dangers with every sense alert. It is the fireboss who is responsible for reporting what places in the mine are safe for work and in what places dangers exist. Where everything is in good shape, the work of firebossing is performed without unusual effort; but more often difficulties are encountered, such as overflowing sumps, roof caves, accumulations of gas owing to the ventilation being poor or the air current short-circuited by the setting open of a door. It is then that the fireboss emerges from the mine, at the last moment, wet through and "all in."

In addition to answering questions regarding the general safety of the mine, the fireboss must often give accurate answers to questions as to the number of cars, empty and loaded, on certain landings, the quantity of water in certain sumps, the quantity of timber on hand or needed in the workings, and the amount of loose coal that is ready to be loaded, etc.

Having fulfilled these duties in compliance with the law, his report being signed, it happens too often that the remainder of the day must be spent "carrying bricks," or, in other words, doing odd jobs about the mine, according to the custom prevailing in that district

or state. Instead of continuing to examine each working place and giving needed instructions to men regarding their safety, the fireboss is too often made responsible for getting out the coal. He soon learns that, in order to be classed as a good man, he must have the name of a hustler. He is taught that promotion comes to the man who can get out the coal.

Viewed from almost any angle, it must be admitted that firebossing, in many coal-mining states, offers little inducement to the best trained men, and this, again, acts as a positive hindrance to securing good foremen, since it is the faithful fireboss who is acquainted with the conditions throughout the mine and who is better fitted for the work of foreman than many men who now hold that position, provided the fireboss possesses those qualifications that fit him to take charge of men. Let me urge, in closing, that the fireboss be regarded as a mine official, put on the salary list and treated by the mine foreman as his assistant which will not only establish confidence but stimulate ambition and increase the efficiency and safety of the mine.

Chicaloon, Alaska.

F. G. J.

Freezing of Shaft in Winter

Letter No. 1—I was interested in the inquiry regarding the freezing of shafts in winter and want to ask why it would not be possible to overcome this trouble, which occurs so frequently in coal mining, by installing a hot air chamber near the top of the shaft. I have never seen this tried, but it would seem to me that such a scheme could not fail to warm the air sufficiently to prevent the shaft from freezing.

To explain more fully my idea, I would say an oven should be built at one side and near the top of the shaft. The idea is to install a furnace or heating system similar to that used for heating homes in winter. A 12-in. pipe could be used to conduct the hot air from the furnace, or hot air chamber, into the shaft.

It is my belief that to reverse the fan in order to prevent the freezing of a shaft would conflict with the requirements of the mining law, in some states. A hot air system such as I have mentioned seems to me better than the use of steam coils for heating the air. I shall watch this discussion with interest.

—, Penn.

EVAN JARVIS.

Letter No. 2—Looking through a recent issue of *Coal Age*, I noticed an inquiry in regard to the best method of preventing the freezing of a mine shaft in winter. As I had been up against this same problem, several years ago, I was naturally interested in reading the inquiry and the reply thereto.

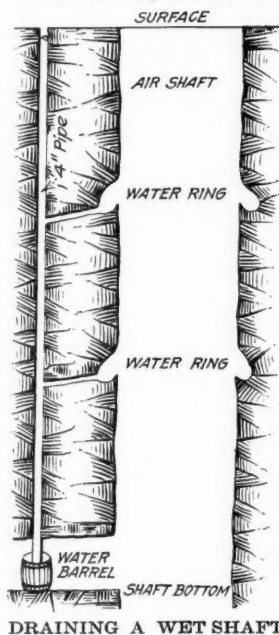
The plan that we adopted was so successful that I have often wondered that many of our smart engineers and mining men have not tumbled to the same idea. When I think of the simple way in which we overcame the difficulty, the correspondent's suggestion of putting in steam coils at the shaft to heat the intake air seems funny to me; and the further suggestion, offered in the reply to this inquiry, of impregnating the water draining into the shaft with salt does not appeal to me.

In explanation of the method we adopted, let me say that I saw the idea first tried out at a mine where I

worked some years ago. At that mine, the air shaft was located at the extreme end of the field; and, as the fan was exhausting, the air was drawn into the mine through this air shaft. The shaft was very wet and, naturally, froze up in cold weather and gave much trouble. It often happened that the air current was completely shut off by the ice, which would close the shaft tight.

DRAINING THE SHAFT BY MEANS OF WATER RINGS AND A BOREHOLE

Under the conditions described, it is clear that it would be impracticable to put in steam coils to heat the air. Also it would be a difficult job to impregnate the water with salt to prevent it from freezing in the shaft. The method we adopted is shown in the accompanying figure.



A hole was drilled about 6 ft. outside of the shaft curbing, and a 4-in. pipe inserted in the hole. Water-rings were put in at points in the shaft where the water entered. These rings were then tapped into the drillhole so that the water drained to the bottom of the shaft. In order to trap the air and prevent its entering the pipe, the latter discharged into a barrel, the end of the pipe being submerged in the barrel, as shown in the figure.

It was important to keep the end of the pipe submerged in the sump or water barrel at the bottom of the shaft. If this is not done the air entering the pipe from below will cool the pipe and cause trouble. This method has been tried in a number of wet shafts and has proved successful in every case.

Smock, Penn.

MINE FOREMAN.

Letter No. 3—Referring to the question of preventing the freezing of a shaft in winter, as suggested in the inquiry that appeared in *Coal Age*, Nov. 28, p. 1004, kindly permit me to give my experience in this regard.

For the past 15 years I have used the exhaust steam from the fan, for this purpose. Putting a valve in the exhaust line and extending two joints of pipe down the shaft made it possible to use part or all of the exhaust steam, according to the condition of the shaft. The plan proved very successful. Previously we had tried the method of reversing the fan at night, but this caused considerable confusion and expense, besides freezing up the hoisting shaft and cages.

USE OF EXHAUST STEAM REMOVES ICE TROUBLE

At one mine, our downcast shaft was partitioned off to provide for a hoistway for lowering men and supplies into the mine. In that case, although there was a water ring surrounding the shaft, we had no end of trouble and delay, both in the airshaft and the hoistway. The accumulation of ice threw the cages and the coun-

terweights out of the guides, or bound them fast so as to prevent their operation.

The ventilating fan at this mine was a blower, producing 100,000 cu. ft. of air per min. When the exhaust steam from this fan was turned into the shaft, the ice disappeared and we had no further trouble. The steam, moreover, increased the humidity of the air, which was a decided advantage, considering the dry and dusty condition of the mine. Since that time, we have used the same method every winter and have had no trouble. Whenever I have seen men engaged in cutting ice in shafts, I have advised them to use the same method wherever exhaust steam from the fan or pump was available.

EXPERIENCE RELATES TO SHALLOW SHAFTS

It may be well to state, however, that my experience in the use of exhaust steam for preventing the formation of ice in shafts is confined to comparatively shallow openings, the shafts being 200 and 350 ft. in depth, respectively. We are using the same method at present and utilizing, in addition, a part of the exhaust steam from the pump located at the bottom of the hoisting shaft.

It is my belief that this method can be depended upon to keep a shaft free from ice and produce no ill-effects. I will say that, as the mine advances and the first entries are worked out, we carry part of this steam on the day shift, as it is quickly absorbed in the air current and does not extend to any working place. I trust that others may find this plan of value, and that it will help them to overcome what is always a serious trouble in coal mining.

SUPERINTENDENT.

Athens, Ohio.

Portable Coal Loaders

Letter No. 1—Having given much study to the question of loading coal by means of a mechanical shoveler, I was naturally interested in the inquiry that appeared in *Coal Age*, Nov. 21, p. 961, in which an operator, at Rugby, Colo., asked for information regarding portable machines for loading coal at the working face. I am glad to give him a little of my own experience along this line.

During the past 15 months, we have had a Myers-Whaley coal shoveler and loader at work in our mines. This is a No. 4 machine and has been used for excavating bottom coal after shooting. It has given excellent satisfaction. It is guaranteed to shovel and load, dependably, 40 tons of coal per hour, or 1 ton per minute of heavier material.

More recently, we have been running into thinner coal, which makes it desirable to trade off our No. 4 for a No. 3 machine that would work better in the low coal we are now mining. The No. 4 machine works well in a 6- to 8-ft. seam. I have no hesitancy in saying that, in such a seam, with good tracks, good motive power and plenty of loose coal at hand, the machine will surely load its guaranteed capacity.

For his information, let me say to "Operator" that he can see these machines at work at some of the mines in Utah, where they are in regular and successful operation. My belief, based on experience, is that wherever

this machine is installed and given personal attention, it cannot fail to prove an unqualified success. The fact that the manufacturers are behind on their orders, also bears out that statement. We have used our No. 4 machine on a 42-in. gage track, operating with direct current at 250 volts.

C. H. THOMPSON, Vice-Pres.,

Darbyville, Vt.

Darby Coal Mining Co.

Constructive Practice in Mining

Letter No. 1—Before taking up my work on the Fuel Administration Board I was engaged in mine-welfare work, which has caused me to be intensely interested in the recent letters of *Coal Age* readers discussing the safety of miners; the elimination of the alcohol curse; the Americanization of foreigners; and the increase of coal production by the use of modern methods and machines. Too much cannot be said on these subjects, for they are the most essential problems in the great coal industry today. Their discussion is constructive.

One of the writers very properly referred to the shortcomings of the miner. It would be wrong, however, to infer that the careless action of employees, in any way, excuses the employer from taking every possible precaution for the safety of his men. Unfortunately, the examples of the carelessness of mine workers are only too true, which any man familiar with mining conditions knows by experience. But the very nature of the foolish acts of some miners points to the necessity for double care and thought on the part of every conscientious mine operator and, likewise, every responsible man who represents him.

TRAINING MEN FOR SAFETY

Foolish acts of workers indicate that the men who perform them are not men but boys, mentally, if not in years. They cannot be treated, therefore, in the same manner as men who do their share to make mining a safe occupation, but must be handled as men regard boys. The man foresees dangers that beset the path of the boy and strives to remove the danger to the best of his ability. The same preventative action on the part of the operator requires constant vigilance, constructive thinking and an exact knowledge of every phase of the work.

The miner spends at least a third of every day in the mine and the man who is to make the mine safe for him cannot hope to do so, effectively, unless he also spends much of his time in the mine. Even a conscientious miner is prone to feel that, while he is in the mine, his safety is up to the boss. He knows the law requires the protection of employees, but he seldom realizes that it is his duty to cooperate in carrying out that provision of the law, and he must have safety thrust upon him. Adequate ventilation, proper timbering and the carefully regulated use of lights are safety fundamentals so important that they are laws.

The ever-present problem of mine safety has two important aspects. The operator must not only strive to make his men safe men, who will obey the rules and take necessary precautions, but he must also keep them safe, by adopting every possible form of safety device and by lessening every dangerous condition that exists in his mine. The more successful he is in making his

men safe men, the less attention he will have to give to keeping them safe; for careful men will keep themselves safe in spite of dangers. They will, also, assist by reporting dangers and making suggestions for their removal. To make men safe men, they must be educated and given a sense of responsibility, which means the personal development of each man.

PROTECTING THE HOMES AND MAKING LIFE ATTRACTIVE

Many mining companies realize that good housing conditions is an important factor in raising the standard of employees. Houses should be so built that it will be possible for those who live in them to make them into homes. A man with a real home will give his employer far better service than when compelled to live under disagreeable conditions. Houses should be sanitary, warm and kept in good repair. They should be as attractive as possible. To make a house attractive does not require extra money for material and labor, but only requires extra thought in making the plans.

The company doctor, if possible, should have duties beyond the bare attendance of the sick and injured. His work should be largely educational and along the lines of prevention rather than curative. We are relying, for the operation of our mines, on a large percentage of foreign-born men with little or no idea regarding sanitation and health. A doctor of the broad, human type can do much to enlighten the minds of these people and keep them healthy and in good working condition. Another means in the improvement of the home conditions of miners is through the school. Children's minds are fresh and unhampered by custom. They are quicker to catch the new ideas and are able to introduce them into their homes most effectually.

Alcohol is without doubt the supreme curse of every mining center, but the curse can only be removed by country-wide prohibition. State prohibition is calculated to upset labor conditions, but absolute dryness throughout the country would be of incalculable advantage to the mining industry as well as to every human enterprise. Until such prohibition comes, however, the evil can be mitigated by careful regulation of the sale of alcohol and by providing suitable counter attractions. Unfortunately these are few, but some good work can be done with the younger generation who have not as yet fallen victims to the curse. Company clubs and schools, outdoor sports and games, good moving pictures, and the encouragement of religious organizations are effectual means of combating the saloon.

SAFEGUARDING THE WORK IN THE MINE

Turning again to the actual work in the mine, greater safety in blasting coal and rock is assured by providing the proper explosives and allowing only carefully trained men to use them. There are laws that limit the amount of explosives that may be carried into the mine by each man. Strict adherence to these laws and the giving out of explosives to authorized men only should be the standard practice among all mine officials who really care to make their mines safe. The daily use of explosives makes men forgetful of their power and unstable nature. It is therefore important to keep fresh in the minds of the men the fact that they are working with a strong but treacherous ally.

Many men are yearly injured and killed by the many

mechanical devices that are so valuable in increasing production. These devices can be made safe, however, without interfering with their productiveness. The use of modern types of mine cars makes far more efficient haulage conditions. Most coupler accidents causing the loss of fingers can be avoided by the use of modern couplers that have been found useful in railroad work, and adopted in many of our best mines.

Cars equipped with roller bearings, especially in mines where they are pushed by hand, have a distinct safety value in cutting down the danger of strained backs, which are frequently caused when men have to push the old type of cars. Moreover, the latter is a menace to the men, because the old car spreads oil along the track, making it unsafe to walk and adding to the possibility of fire.

The installation of positive signal devices will guard against chance collisions. Here, again, education of the men must supplement the mechanical device in order that they will not disregard the signals. Such signals belong wherever there is any possibility of locomotives or cars running into each other. Continuously sounding signals on moving trips avoid running men down.

DANGERS IN MINES ELECTRICALLY EQUIPPED

Too much cannot be said relative to safeguarding mine workers against contact with live wires wherever the electric current is used in mines. A large majority of miners are ignorant of the laws of electricity and although they may have a healthy fear of its effects their very ignorance lays them open to its dangers. Education must always supplement protective devices. Automatic cut-out switches insure the harmlessness of the trolley in any working district during the absence of the locomotive. The motorman may forget to make the trolley safe behind him, but the trolley wheel performs that function for him. Careful insulation of cables to coal cutters and coal loaders is necessary, and these cables should be frequently inspected to detect any serious abrasions of the insulation, which is likely to occur due to the rough handling that the cables receive.

By the use of a good system of communication between the surface and the various internal parts of the mine, much guesswork is eliminated, which is always a source of danger. Many accidents occur to men working around a shaft bottom and to men while being hoisted to the surface. There are practical protective devices to keep men working at the shaft bottom from being struck by falling coal. Installing such devices makes that part of mining equipment a much safer proposition. With the coal at the tippie and the mining operation practically complete, easy moving cars and good car unloaders do their share in minimizing tippie accidents.

Warning signs, in as many languages as there are nationalities working in the mine, are necessary wherever there is danger. The use of steel signs will prevent alterations and destruction of these warnings. Mining will never be an altogether safe operation, but its degree of safety can be brought much higher by constructive, conscientious effort on the part of the mine operator. Many mine operators are willing to make this effort for the good of humanity alone; but even those who are not should be as much interested, for it means increased production at a less cost per ton.

Washington, D. C.

MAVERETTE ASHLEY.

INQUIRIES OF GENERAL INTEREST

Winding Armatures

Would it be possible, through the medium of the *Coal Age* columns, to ask readers to discuss the different methods of winding armatures, explaining the tools used for that purpose and describing the particular adaptation of the methods employed and the advantages resulting therefrom. Permit me to say that I am an armature winder by trade, myself, and have found that different types of machines require different methods of winding.

It has occurred to me that a practical discussion along these lines might be of interest to all who are engaged in coal-mining practice. I have found much helpful information in reading many of the discussions in *Coal Age*, and feel that, while the subject of winding armatures is a wide one, many points may be brought out that will help to simplify the work.

Molus, Ky.

GEORGE W. RAMSEY.

A volume could be written on the subject suggested by this correspondent, and a discussion of the different methods employed in winding armatures would necessitate much detail in the way of illustration and, at the same time, be apt to cover ground that is already fully covered in textbooks treating the subject. Hence, it does not appear that there would be any great advantage in a discussion of the methods of winding armatures. *Coal Age* will be glad, however, to receive the suggestions of readers bearing on the subject, with particular reference to explaining kinks or points of practical interest that may prove helpful in expediting the work of winding and simplifying what is difficult in the process.

Wire-Rope Formulas

Among the examination questions answered in *Coal Age*, Oct. 31, p. 838, is one giving the method of calculating the breaking strain and safe working load of a 1½-in. steel hoisting rope. I want to ask if the same formula will answer for calculating the breaking strain of different ropes; as, for example, ropes of Swede iron, cast steel, extra cast steel and plow steel. Also, how do haulage ropes differ, in this respect, from hoisting ropes, which the answer to the question referred to states is a 6-strand, 19-wire rope. Kindly give the formulas used for calculating the strength of the different wire ropes used in mining practice.

Witt, Ill.

JOHN H. PLANT.

The formulas for calculating the strength of all kinds of wire rope are of the same general character as that given in the answer to the question to which this correspondent has referred. The formulas relating to the different kinds of rope differ only in the constants employed.

Hoisting ropes differ from haulage ropes in the requirement that they must be more pliable to withstand the severe jerks and sharp bends to which they are subjected, in the daily practice of hoisting in shafts. In American practice, both hoisting and haulage ropes consist of 6 strands. Each strand of a hoisting rope, however, has 19 wires, while a single strand of a haulage rope is made of 7 wires.

The 19 wires forming a strand in a hoisting rope are much smaller and therefore more pliable than the 7 wires that make up a strand of a haulage rope. The larger wires of the haulage rope are better able to withstand the abrasion to which such ropes are subjected in mine haulage. In conclusion, therefore, hoisting ropes are adapted to withstand bending, while haulage ropes are fitted to withstand abrasion.

The following formulas are based on the tables giving the breaking strength of different sizes of the four kinds of wire ropes manufactured for mining use. These tables were published by manufacturers of wire rope in this country. The constant in each formula is the breaking strain of a 1-in. rope of the material stated.

In hoisting practice, today, cast steel, or extra crucible cast steel ropes are chiefly employed. The breaking strain of a 1-in. cast steel, 6-strand, 19-wire hoisting rope, as taken from the tables mentioned, is 34 tons, while that of a similar, extra or crucible steel rope is 39 tons. Following are the formulas giving the breaking strain, in short tons (2000 lb.), of each kind of rope employed for hoisting and for haulage purposes:

	Hoisting Ropes 6-Strand 19-Wire	Haulage Ropes 6-Strand 7-Wire
Swede iron	$S = 17d^2$	$S = 16d^2$
Cast steel	$S = 34d^2$	$S = 32d^2$
Extra cast steel	$S = 39d^2$	$S = 37d^2$
Plow steel	$S = 44d^2$	$S = 42d^2$

In these formulas, S equals the breaking strain of the rope, expressed in short tons (2000 lb.); and d equals the diameter of the rope, expressed in inches. In ordinary mining practice, in shafts not exceeding, say, 300 yd. in depth, the safe working load of a hoisting rope is commonly taken as $\frac{1}{3}$ of the breaking strain of the rope. In deeper shafts, the safe working load may vary from $\frac{1}{3}$ to $\frac{1}{6}$, depending on the depth of the shaft and the style of equipment.

Elements in Mine Ventilation

Assuming a large mine capable of producing 3000 tons of coal a day, kindly say what are the three elements essential to its efficient ventilation.

Springfield, Ill.

STUDENT.

The three elements most essential to efficient ventilation are: A mine fan of sufficient capacity to produce the required air volume; a proper distribution of the air current in the mine; and, third, well-built stoppings, doors and overcasts that will prevent the leakage of air through them.

EXAMINATION QUESTIONS

Hoisting Engineers' Examination. Springfield, Ill., 1918

(Selected Questions)

Ques.—How would you test a steam boiler to ascertain its safety?

Ans.—To insure the safety of steam boilers, they should be inspected regularly and kept free of all accumulations of sediment. The condition of all joints, rivets and stays should be carefully observed. The only safe method or test to apply to a steam boiler to determine the pressure it can safely carry is the hydraulic test, which consists in filling the boiler full of water under pressure and noting any leaky joints.

Ques.—What is the available power of a pair of hoisting engines, with 24-in. cylinders, 5-ft. stroke, when making 40 r.p.m., the gages on the boiler indicating a pressure of 75 lb.?

Ans.—With a boiler pressure of 75 lb. gage, the mean effective pressure in the cylinder of an ordinary slide-valve engine, cutting off at, say $\frac{3}{4}$ stroke, may be taken as 60 lb. per sq.in. The sectional area of a 24-in. cylinder is $0.7854 \times 24^2 = 452.4$ sq.in., and the total pressure on one piston of the engine is, then, $60 \times 452.4 = 27,144$ lb. With a 5-ft. stroke, an engine making 40 r.p.m. has a piston speed of $2 \times 5 \times 40 = 400$ ft. per min. Finally, assuming the efficiency of the engine as 85 per cent., the available horsepower, under the assumed conditions, is

$$H = \frac{0.85 (27,144 \times 400)}{33,000} = 280 \text{ hp.}$$

In hoisting practice, it is customary to estimate the power of a duplex engine on the basis of a single cylinder, as one cylinder is carrying the full load when the other cylinder is on dead center.

Ques.—What kind of engine would you prefer for hoisting at coal mines?

Ans.—Because of its simplicity of construction, the ordinary slide-valve engine is generally preferred for hoisting, in coal-mining practice, except where a large power plant is installed and the hoisting shaft is deep, requiring a larger engine, and greater efficiency is desired in its operation. In that case, a Corliss engine may be preferred.

Ques.—The piston speed of an engine is 540 ft. per min., the number of revolutions per minute is 150; what is the length of stroke?

Ans.—Since an engine makes two strokes in each revolution, the number of strokes per minute, in this case, is $2 \times 150 = 300$ strokes. The piston speed being 540 ft. per min., the length of stroke is $540 \div 300 = 1.8$ ft., or $1.8 \times 12 = 21.6$ in.

Ques.—How would you fasten a rope on a drum?

Ans.—Before attaching the end of the rope to the winding drum, the former should be passed at least twice around the drum. The end of the rope should

then be passed down through a hole bored in the lagging of the drum, and made secure to the drum shaft, by being passed around it and then fastened by a clevis binding the end of the rope to itself. Care must be taken to make no sharp bends in the rope. Two spare coils are required to be kept on the drum as a precaution against overwinding and to provide sufficient length for recapping the rope, at frequent intervals, where it is attached to the cage.

Ques.—How would you open and close the valve to start and stop an engine? Give reasons for your answer.

Ans.—The valve controlling the supply of steam to an engine should be opened and closed gradually, in order to avoid any undue strain on the engine, owing to the inertia of its moving parts.

Ques.—We have a tank full of water, in the morning, when we commence work. We have no more water in sight; the tank is a circular tank 14 ft. in diameter and 20 ft. deep. How long will we be able to run using 1200 hp. per hour?

Ans.—Estimating a single horsepower as $34\frac{1}{2}$ units of evaporation, which means the evaporation of $34\frac{1}{2}$ lb. of water per hour, from and at 212 deg. F., the weight of water required in this case would be $1200 \times 34\frac{1}{2} = 41,400$ lb. per hour. The cubic contents of this tank is $20(0.7854 \times 14^2) = 3078$ cu.ft. Taking the weight of water as 62.5 lb. per cu.ft., the time required to empty this tank under the assumed conditions would be $(3078 \times 62.5) \div 41,400 = 4.64$ hr.; or, say 4 hours 38 minutes.

Ques.—If a boiler generates steam at 85 lb. pressure, what percentage may be gained by heating the feedwater, originally at 65 deg. F., by means of a feedwater heater to 200 deg. F.?

Ans.—Using Marks & Davis steam tables, the total heat in steam, above 32 deg. F., at 85 lb. gage or 100 lb. absolute pressure is 1186 B.t.u. The total heat in the steam above 65 deg. F. is therefore $1186 + 32 - 65 = 1153$ B.t.u., which is the heat absorbed in generating a pound of steam at 85 lb. gage (sea level), and a feedwater temperature of 65 deg. F. Now, using a feedwater temperature of 200 deg. F. means a saving of $200 - 65 = 135$ B.t.u. per lb. of steam generated. The percentage of saving is, therefore, $(135 \times 100) \div 1153 = 11.7$ per cent.

Ques.—What is meant by the terms, water line, steam space and the heating surface of a boiler?

Ans.—The term "water line" is the normal water level in the boiler. The "steam space" of a boiler is the space occupied by the steam in the boiler, which is the total space above the water line in the boiler, including the steam dome. The "heating surface" of a boiler is the entire exterior surface of the boiler plates that is exposed to the heat and gases of the furnace, and includes also the inner surface of the flues or tubes of the boiler through which the heated gases pass.

COAL AND COKE NEWS

What Happened in November

[The bracketed figures in the text refer to pages in the present volume and should the reader desire further information he can obtain it by reference to the pages indicated.]

- Nov. 1—New wage scale in anthracite region comes into effect, having been approved by Dr. Garfield Oct. 31 [789, 829, 867, 908]—Nichol Thompson, Pacific Coast representative of the Fuel Controller of Canada, raises the price of coal in British Columbia 75c. per ton to accord with the wage increase [920]—Benjamin L. Flynn, general superintendent, Logan Mining Co., Logan, W. Va., dies of influenza [921]—The Fuel Administration declares its intention to commence on Nov. 15 its campaign to provide coal for points in the East, including Pennsylvania, New York, New Jersey and the New England states.
- Nov. 2—Fuel Administration announces that 19 more coal mines are closed because their product has been improperly prepared [906]—Fuel Administration decides against regulation of opening and closing hours of offices, stores and other mercantile establishments and places of amusement.
- Nov. 4—MacBeth Coal Co. begins the shipment of coal from its Rum Creek mine in Logan County, West Virginia [880]—Tippie and boiler house of the Cross Mountain Coal Co., Briceville, Tenn., burned down [921].
- Nov. 6—New anthracite price schedule agreed upon [905]—The railroads in the coke region around Uniontown, Penn., being shorthanded owing to the influenza, call on the employees of the coke companies to help move coke cars [905].
- Nov. 7—Dr. Garfield requests that the police survey of New York City's fuel resources ordered by Mayor J. F. Hylan be not made [906]—Burton L. French introduces into the House of Representatives a bill providing for reconstruction projects [952].
- Nov. 9—New regulations made regarding "lightless nights"—Regulation made that placing coal in householders' bins shall not permit the retail coal dealer to add more than 75c. to the price.
- Nov. 10—Fuel Administration announces that hereafter applications for new railroad switches for use of coal mines shall be filed with local railroad officials and not with the Fuel Administration [949]—Fuel Administration announces that New England desires a reduction in its bituminous coal allotment from 30,000,000 tons to 27,300,000 tons [950].
- Nov. 11—United War Work Campaign Fund Drive starts [923]—Armistice is signed by Allies and Germany.
- Nov. 13—All restrictions on the use of fuel in the production of building materials including brick, cement, lime, hollow tile and lumber are removed.
- Nov. 14—Fuel Administration announces that all rules and regulations in force will so remain till the promulgation of the treaty of peace unless revoked by officers of the Administration [949]—Restrictions on clay products and cement set at half those established in the order of Apr. 3 and Aug. 8 respectively [950].
- Nov. 15—Fuel Administration decides to restrict the operations which it has set on foot to promote the more efficient use of power at mining plants.
- Nov. 16—Fuel Administration announces that its plan to save by zoning 160,000,000 car-miles seems likely to be more than effected [949, 994]—Fuel Administration announces that it will conduct schools of instruction in the cities of Illinois, Indiana and Michigan at which will be explained how bituminous coal can be satisfactorily used as a domestic fuel.
- Nov. 17—Fuel Administration rules that smaller sizes of anthracite than pea shall be sold at a price at least 50c. below that established for anthracite of pea size [950].
- Nov. 18—Explosion of gas in No. 11 colliery of the Lehigh Coal and Navigation Co., in anthracite region, kills one and injures six men [1007].
- Nov. 19—Frank P. Walsh, joint chairman of the National War Labor Board resigns [952]—John P. White, joint director of the Bureau of Labor in the Fuel Administration resigns [995]—Fuel Administration announces that certain parts of its work such as the supervision of anthracite and the maintenance of the zoning system cannot be suspended, at least at the present [993]—Fuel Administration announces that four more mines have been closed down because of the impurity of the coal produced, making 119 in all.
- Nov. 20—United States Fuel Administration announces that instructions have been issued to all camps to release anthracite mine workers [993]—"Lightless Nights" are discontinued throughout the country though rulings may still be made by local fuel administrators if in their belief such a regulation is needed.
- Nov. 22—Storage limits on bituminous coal are lifted [994].
- Nov. 23—The zone restrictions are modified on the Kanawha and Michigan district in the Kanawha, Guyan Valley and Logan districts of the Chesapeake & Ohio, and the Kenova-Thacker districts of the Norfolk & Western, all in West Virginia and the Sandy Valley and Elkhorn districts in Kentucky. Producers are allowed to ship coal to industrial plants in a part of Indiana and for general use in an increased portion of Ohio.
- Nov. 25—Arrangements are announced by Fuel Administration under which Pittsburgh consumers are allowed to store their winter's fuel [1039].
- Nov. 26—Fuel Administration speeds up the "Burn Wood" campaign.
- Nov. 28—Submarine attacks having ceased, coal from two pools is to be permitted to be sold for bunkering purposes. The coal from these pools makes a telltale smoke which in war would have aided the enemy to discover the presence of the vessels using it—Avondale washery of Delaware, Lackawanna & Western R. R. Coal Department, burns down [1052]—Evan D. John, director of the Illinois Department of Mines and Minerals, dies after an illness of five weeks [1052].
- Nov. 30—Dr. Garfield announced that zoning and coal-price restrictions would probably be removed Dec. 15 [1039].

Harrisburg, Penn.

The Pittsburgh & Lake Erie Railroad Co., the Erie Railroad Co., the Bessemer & Lake Erie Railroad Co. and the Northwestern Pennsylvania Railroad Co. were ordered by the Public Service Commission on Dec. 11 to make effective in two weeks a joint rate of \$1.55 per ton on bituminous coal delivered from the mines to Edinboro, Penn., on complaint of the Edinboro State Normal School that the railroads had failed to comply with a similar order issued by the commission last April. The commission retains jurisdiction in the case to ascertain the amount of damages due the complainant by this failure to comply since the issuance of the first ruling.

Profiteering in coal, sold by the bucket or small quantity to the householders, will be prevented in Philadelphia, and the peddlers and storekeepers will have no chance to duplicate conditions in New York, where as high as \$40 per ton has been charged by coal gougers. Dealers in nut and pea coal are obliged to sell at a price set by the Fuel Administration and are restricted by the Bureau of Weights and Measures from giving underweight.

Storekeepers are licensed to sell nut when in bags of 25 lb. net weight, at 19c.; pea in bags of 25 lb. net weight, 16c.; nut in 10-qt. buckets, containing not less than 18½ lb., 13c.; pea, in 10-qt. buckets, containing not less than 18½ lb., 11 cents.

From what railroad men say, and what railroad and state police say in corroboration of them, there is not much stealing of

coal considering the large amounts that are being hauled every day. Last year, owing to the severity of the weather, there was some annoyance because of the way cars were raided, but this year there has not been much doing along that line. The strict policing has prevented much of the coal picking that used to go on, while the gangs that used to jump coal trains and throw off coal have been fairly well broken up throughout the state.

Charleston, W. Va.

Production in the Tug River and Pocahontas fields at the present time is about 100,000 tons a week under the maximum mined during the war. The influenza epidemic has broken out anew, and this is chiefly responsible for the loss of man power. There has been no decrease in the amount of coal coked.

In the Fairmont region, during the week ending Dec. 7, production was maintained on the same level it had been throughout November when a total of 24,184 cars were loaded. The car supply was exceptionally good at the beginning of the week, but on the last day of the week the supply fell short of requirements by about 500 cars. Much of the coal produced in the region in the first week of the month was used for railroad purposes, and between the demand from that source and the commercial sales, producers were rather elated over market conditions. In some quarters complaint was made that the market was somewhat stagnant.

Production was curtailed in the New River region during the week beginning Dec. 2 by serious labor troubles combined with more or less sickness in certain localities. While New River coal had accumulated to some extent at Newport News and Locust Point, this did not materially interfere with shipments. As against a gross tonnage output during the last week of November of 233,000, only 216,540 gross tons were produced during the first week of the month, a decrease of 16,000 gross tons. There is an excellent demand, generally speaking, for New River smokeless.

There has been no effort to restrict production in the Kanawha region, even though the product of the district is shut out of certain eastern and western markets by zone restrictions. During the first week of December the total net tonnage produced was 148,434 tons, a decrease of 3000 tons, the principal production loss being due to labor shortage. The car service during the week was ample for all requirements. However, 21 mines did not submit a report.

There was a sharp decline in production in the Roaring Creek field during the first week of the month due solely to labor troubles. Further south, on the Coal and Coke, influenza had spread rapidly and many operations were affected.

Perceptible improvement was shown in the production record of the Logan mining district during the week ending Dec. 7, the output for that week reaching a total of 210,934—a tonnage of nearly 80,000 in excess of that for the final week in November, when only 131,797 tons were produced and when only 47.80 per cent. of the full tonnage of the district was produced, as against 78.89 per cent. the first week of December. Production losses from "no market" in this district were reduced from 123,305 tons to 19,117 tons, or from 44.72 per cent. to 7.15 per cent. of the full capacity of the mines. The car shortage was almost negligible.

Birmingham, Ala.

Despite the ravages of influenza, operators in the Birmingham district are optimistic over the prospects faced with the coming of the new year. The demand supplied by the mines in this section is steadily showing an increase with the removal of all Government restrictions on storage of coal by firms and individuals.

Mobile is handling greatly increased steamer tonnage, and the demand for bunker coal from that port, as well as from New Orleans, is such that many cars are being used to make shipments there. The entire equipment for Warrior transporta-

tion is being used in this trade also. A goodly quantity of domestic coal is also being shipped in that direction.

Coal experts throughout the district, despite the influenza situation, expect production to show an increase shortly. However, if such an increase is recorded, it will not be due to the letting up of the epidemic, but to the redoubled efforts which miners are making at the urgent appeal of union officials and organizers.

Differences between operators and miners as to when the present contracts are to become void have become an issue in the district, but no trouble is anticipated at present, as union officials and organizers of the United Mine Workers are going to the various camps and appealing to the men to continue working under the war contracts. Throughout the district Sunday, Dec. 8, the officials were making talks at camps in the district and asking for increased efforts to meet the demand for fuel to be used in converting the industries of the country from a war to a peace basis. The labor problem is expected to become a dead issue with the discharge of many thousands of men from Southern camps. Already Federal labor directors are writing to corporations here, asking how many men they can use. Advantage is being taken of this opening by many operators.

Coke manufacturers report an excellent demand for their product, being full up with contracts at present. Additional orders are being refused by nearly every operator in the district. The foreign demand for this commodity is showing a steady increase. Most of the export trade from the district is with Mexico.

PENNSYLVANIA

Anthracite

Nanticoke—In an announcement made public on Dec. 10, General Manager Robert A. Quin, of the Susquehanna Collieries Co., stated that the management had made arrangements whereby all former employees now with the colors will obtain their former positions when they return home. Nearly 800 young men are affected by the company's decision.

Drifton—Tuesday, Dec. 24, has been selected as the date for the annual festivities which surround the Coxe Christmas tree in Cross Creek Hall, where thousands of little ones of the mining towns in this community will be remembered with substantial gifts. The giving of toys and wearing apparel will be omitted this year, a cash donation and candy taking the place of these.

Shamokin—Ex-sheriff W. E. Taby, of this city, and a number of others are erecting a large washery at a point in the creek channel midway between Green Ridge and Atlas. Already the framework for the structure is raised and within a short time the culm and coal in the creek channel will be run through the washery for market. A spur of railroad has been run to the structure. The building of the washery was held up for some time because of a dispute between coal companies as to ownership.

Bituminous

McDonaldton—The Brothers Valley Coal Co. has contracted with the Roberts & Schaefer Co. for the installation of a coal storage plant, to be installed in connection with the tippie at Mine No. 3.

Charleroi—The Winstead Coal Co. has received a Federal permit to construct a coal tippie, three ice breakers and four dolphins on the right bank of the Monongahela River, about 2400 ft. above Lock No. 8, near Point Marion, on the Fayette County side of the river.

Pittsburgh—The Pittsburgh Coal Co. is opening a large new mine, to be known as Montour No. 10. It is located on the Montour R. R. near Library, Allegheny County. There will be two drift openings, one on each side of a wide ravine about on the railroad grade. The coal from each opening will be conveyed to tippie height by chain car hauls, the tippie spanning the ravine. The coal will be screened on two Marcus screens, of 300 tons per hour capacity each, furnished by the Roberts & Schaefer Co., of Chicago. The mine is being equipped for a capacity between 4000 and 5000 tons per day and will be modern in every respect. A large town will also be built to accommodate the employees.

Uniontown—Additional coal lands owned by J. V. Thompson, bankrupt, have been disposed of for a total of \$2,154,870.27, according to announcement made on Dec. 10. The deals have been completed, it was stated, but are subject to the approval of the creditors of Thompson, who will meet Jan. 7. The biggest of the deals was with James Edward Dorsey, of New York City, who purchased 2566 acres in Cumberland, Monongahela and Dunkard townships,

Greene County, for a consideration of \$1,460,098.03. The average price per acre was between \$625 and \$650. Another deal was with H. G. Rockwell, of Chicago, who purchased 1177 acres in Whittley and Franklin Townships for \$450,645.80, the price per acre ranging from \$300 to \$400. About a dozen individual purchases were made.

WEST VIRGINIA

Huntington—Equipped with a new high-tension power plant in operation, the Coneva Coal Corporation of Chavies, Ky., has greatly increased its output. The company has installed an electric fan at its No. 2 mine and is preparing to begin operations at the No. 3 mine. Within a short time a 500-ton storage bin will be available for use. The company also contemplates installing storage-battery gathering motors.

Huntington—During the first week in January the Solvay Collieries Co. will start the publication of a magazine for free circulation among its employees at its fifteen mining plants in West Virginia and Kentucky. The publication office of the magazine will be in Huntington. The new publication is to be known as "Solvay Folk," and George C. McIntosh, who recently resigned from the Bureau of Information, United States Fuel Administration, will be its editor.

Richard—A conflagration destroyed the greater part of the plant of the Elkins Coal and Coke Co. at this place, on the night of Thursday, Dec. 5, only a few fireproof buildings escaping destruction. The loss to the company is estimated at approximately \$50,000, partly covered by insurance. The fire had its origin in the engine room of the crusher plant. Though the company has its own fire-fighting apparatus, the flames, fanned by a high gale, spread rapidly, burning to the ground the tippie, crusher plant, supply trestle, power house, etc. On the morning following the fire the work of reconstruction was begun, and although it was necessary to order much new material and machinery, General Superintendent J. B. Hansford expected to be able through hastily improved means to resume producing coal within a few days.

Fairmont—Jacob F. Straight, who is now secretary of the Fairmont and Cleveland Coal Co., will sever his connection with that corporation in an official capacity on Jan. 1. Mr. Straight has disposed of a portion of his holdings to William E. Watson, Jr., and associates. The Fairmont and Cleveland Coal Co.'s operation is known as the Parker Run mines at Rivesville, where the Sewickley seam is being worked. Mr. Straight has retained a considerable portion of his holdings in the operation. He has not decided as yet whether he will re-enter the coal business.

TENNESSEE

Knoxville—The tippie and chutes of the Wisconsin Steel Co. coal and coke works, at Benham, Ky., were destroyed by fire Dec. 2. The loss is considerable, as the company had remodeled the plant in 1916 and 1917 at a cost of approximately \$50,000, putting in up-to-date screens with pendulum hangers, boom conveyor leaders, box-car leaders, conveyors, etc., and replacing part of the structure over the loading tracks with steel. The company is producing some coal from new mines recently opened across Looney Creek from the original opening, but the old mine and the 408 beehive ovens will be idle until the tippie can be rebuilt.

INDIANA

Petersburg—Arrangements are being made for the installation of the big new steel tippie at Atlas mine No. 1, north of Petersburg. The structure, which is to replace the big tippie destroyed recently by fire, is to cost \$156,000, will be 96 ft. high and built to handle 4500 tons of coal daily. Big washeries will also be installed. Workmen have begun labor upon a washhouse which will accommodate 450 miners. One hundred and fifty new cars have been shipped to the new Atlas mine and switch room is being made for sixty empty coal cars a day. More than \$300,000 will be spent in improvements this winter and early next spring.

ILLINOIS

Carlinville—The purpose for which the Standard Oil Co. is sinking its great mines at Shopper, near this city—to furnish coal for its vast oil refineries—is about to be realized, for within a few days the first consignment of coal will be shipped to Whiting, Ind. The coal will be routed over the Northwestern, and Trainmaster Culp of that road has been in Carlinville and vicinity conferring with local railroad men as to the proper handling of coal. The first

shipment of coal will come from what is known as Mine No. 3, which has been opened with marvelous rapidity, considering the size of the shaft. The railroad between Carlinville and Shopper has been completed as far as the Northwestern tracks, and a shuttle train will be run just as soon as the coach arrives. This will take the workers to within half a mile of the mines and will enable them to live in Carlinville. The road will be completed into the mine just as soon as the viaduct over the wagon road can be built and the dam of the reservoir completed. The dam will be used as roadbed.

Lincoln—Coal miners who failed to file income reports last January to April are being interviewed by a deputy internal revenue collector from the office of J. L. Pickering, of Springfield.

Decatur—So well have the people of Decatur and Macon County stocked up on their winter's supply of coal that the miners state that they will have a regular "summer" season, as far as work is concerned. All summer the local mines were working at capacity digging coal to fill the basements of Decatur homes and the yards of Decatur industrial plants. Now the mines are running only part time and the miners are receiving only about half the usual pay.

West Frankfort—The Byproducts Coal Corporation is installing 500 kv.-a. at Mine No. 19 and 550 kv.-a. at Mine No. 18. The company was purchasing power from the Central Illinois Public Service Co., but was compelled to make the installation because the service company rendered unsatisfactory service. A 72 x 18 horizontal tubular boiler is also being installed at Mine No. 18.

The Old Ben Coal Corporation is sinking a new mine two miles southwest of West Frankfort. It is now down 165 ft. and is going to a depth of 420 ft. The main shaft is 12 ft. 8 in. by 22 ft. Coal only is to be hoisted at the main shaft. The air shaft is 12 ft. 8 in. by 24 ft. Men and material are to be hoisted and lowered at air shaft only. The capacity of the mine is expected to reach 5000 tons a day. A temporary steam hoist is to be used, but later an electric hoist is to be installed. Mine is to be electrically operated below with 20 locomotives and 35 machines. Building is to be of high-roof type and of brick and steel sash construction. Energy will be secured from Mine No. 11 at Christopher, Ill., and No. 9 at West Frankfort.

OKLAHOMA

Okmulgee—Purchase of the Okmulgee County properties of the Blackstone Consolidated Coal Co. by M. C. Rosenbaum, of New York, and G. G. Gillette, of Tulsa, and the fact that the new owners of the Blackstone property were working on a plan which would lead to the construction of a direct route from Oklahoma City to Okmulgee and Henryetta was announced recently. The coal mine of the Blackstone company near Schuler has already been taken over by the new owners and the mine is being completely equipped with modern electric coal-mining machinery. The mine is now producing between 400 and 500 tons per day, and when all the new equipment is installed the mine will produce about 1000 tons a day.

BRITISH COLUMBIA

Nanaimo—One of the smaller powder houses of the plant of the Canadian Western Fuel Co. was completely obliterated recently by an explosion the cause of which is a mystery. Fortunately the accident happened when there were only a few men in the vicinity, and no one was seriously injured. It is thought that some detonators were left in the building by mistake and that the explosion was the result of some of these falling to the cement floor.

Princeton—Fire in the workings of the Princeton colliery interfered with operations toward the end of November. It is now well under control, however, and work is proceeding.

Prince Rupert City—The Telkwa collieries, situated on the line of the Grand Trunk Pacific Railway Co., northern British Columbia, are finding some difficulty in keeping coal moving from the mine to provide the domestic needs of Prince Rupert City and the adjacent district. Jabe Ashman, the superintendent, asserts that there is plenty of coal in the bunkers but, because of bad roads and for other reasons, there has been delay in arranging for its transportation.

New Westminster—That the British Columbia collieries are exporting coal before fully providing for the domestic needs of the Province is a charge made by the civic authorities of New Westminster. In a recent discussion of the fuel situation in this city it was stated that the dealers did not

have their normal supply of coal and, if exceptional conditions arose, a serious shortage might develop. It was decided that Nichol Thompson, Fuel Controller, be requested to see that all home demands were filled before the collieries were permitted to fill export orders. Incidentally the action of Mr. Thompson in allowing the dealers to raise their price to the consumer 66c. a ton following an advance in miners' wages of 75c. a day was criticized, it being pointed out that the per capita rate of coal production at the mine was 5½ tons a day. One of the aldermen, taking the viewpoint of the dealers, sarcastically observed that "it pays to increase wages."

Personals

J. W. Powell, mine manager at the Cassidy's colliery of the Granby Consolidated Mining and Smelting Co., Cassidy's, B. C., has resigned and has been succeeded by **James Hargreaves**.

M. L. O'Neil, of Morgantown, W. Va., superintendent of the Connellsville Basin Coke Co., has resigned that post to become superintendent of the New York Pyrites Co., a New York concern.

M. R. Evans, formerly senior inspector with the Associated Companies, has resigned to accept the position of safety engineer for M. A. Hanna & Co., of Cleveland, Ohio, with headquarters at Wilkes-Barre, Penn.

Louis H. Spier, formerly with Olin J. Stephens, Inc., New York City, has been appointed general manager of the coal business of Joseph Gordon, at the foot of East 38th St. Mr. Spier was connected with the Stephens Co., one of the largest coal concerns in The Bronx, for more than 20 years.

P. C. Thomas has been chosen as general manager of the East Gulf Coal Co., headed by P. M. Snyder. Mr. Thomas' headquarters will be at East Gulf, W. Va., in the Raleigh County field. Up until the time he accepted his new position Mr. Thomas was assistant to the general manager of the New River Coal Company.

F. H. Watson, who has been district manager in charge of the Columbus office of the George M. Jones Coal Co., of Toledo, has resigned to accept the sales management of Monsarrat Brothers, an operating concern of Columbus. The Monsarrat interests control extensive properties in the Hocking Valley and have a daily output of about 1500 tons. Mr. Watson assumed his new duties Dec. 10.

Obituary

John Kerr, of Fayette City, Penn., district mine inspector for the Pittsburgh Coal Co., died Dec. 8 of influenza.

Hugh Sloan, shift boss at the Cassidy's colliery of the Granby Consolidated Mining and Smelting Co., Cassidy's, B. C., died recently from pneumonia following an attack of influenza.

John J. Cannon, chief engineer of the Guerber Engineering Co., Bethlehem, Penn., died of pneumonia on Sunday, Dec. 15. The deceased was 51 years of age. Mr. Cannon was partly or wholly responsible for the designing and erection of the majority of the coal structures in the anthracite fields of Pennsylvania.

William Cameron, for many years secretary of the St. Louis Coal Traffic Bureau and chairman of the St. Louis East End Bound Freight Committee, and who has had charge of coal-tariff making in St. Louis for many years, died in a sanitarium in Denver, where he had gone for his health. He is survived by his widow.

William Lewis Phillips, ex-President of District 18, United Mine Workers of America, which includes the eastern British Columbia and Alberta coal-mining camps, who left Fernie, B. C., with the 225th Overseas Battalion C. E. F., has been reported killed in action on Sept. 28 last. Thomas, a brother, was officially reported killed on Sept. 29, the day following. W. L. Phillips first came to Fernie from Wales seven years ago and was employed on the engineering staff at the Crownest Pass collieries. After holding minor offices in the Fernie Union, he was elected to the post of President of District No. 18 in 1914. After the expiration of that term he was reelected but resigned before the end of the year in order to take up arms with the Canadian forces. Two brothers, David E. and Richard S., are residents of Fernie.

Industrial News

Cape May, N. J.—The Government has completed plans for the construction of a new coal-storage building at the local naval air station. The structure is estimated to cost \$50,000.

Chicago, Ill.—W. F. Keckelsen, formerly advertising manager of the International Filter Co., and previously associated with the Federal Sign Co., has joined the staff of Russell T. Gray, advertising engineer, Chicago.

New York, N. Y.—The Bertha Coal Co., of Pittsburgh, Penn., has opened a New York office in the Hudson Terminal Building, in charge of Dr. Henry M. Payne, assistant to the president, and George N. Reed, Eastern traffic manager.

Punxsutawney, Penn.—The Onondaga Coal Mining Co., of Punxsutawney, has contracted with the Roberts & Schaefer Co. for the rebuilding of the steel tippie at this point. Marcus screens, rock disposal machinery and boiler house coal equipment will be provided for.

Ironton, Ohio—The Ironton Engine Co. announces that it has discontinued its branch office at Pineville, Ky., and has opened an office at 1501-1502 Fayette National Bank Building, Lexington, Ky. W. H. Patton, who was formerly located at Pineville, will be in charge.

Elkins, W. Va.—An operation will be established in Barbour County by the Row Coal Co., which will open a coal mine near Junior. The new company has an authorized capital of \$20,000. The incorporators are W. A. Row, W. J. Row, G. F. Row, L. H. Row and Cora V. Hillyard, all of Junior.

Charleston, W. Va.—Capitalized at \$25,000, the Barbe Coal Co., of Morgantown, will have its plant in Harrison County, where a tract of coal land will be developed. The organizers of the company are W. D. Reed, of Fairmont; Victor E. and Edith Barbe, of Clarksburg; Guy Hall and Mabel Wilson, of Morgantown.

Charleston, W. Va.—Reconstruction work on the railroad connecting its Coal River properties with the Chesapeake & Ohio R.R. near Seth has been virtually completed by the Federal Coal Co., which will develop leases in the Coal River section as well as on the extension of the Kanawha & Michigan Ry. in Nicholas County.

Morgantown, W. Va.—Operations both in Monongalia County and in Preston County, West Virginia, will be established by the Wilmoth Coal Co., financed by Connellsville capital, the new company having an authorized capital stock of \$95,000. The incorporators are S. R. Goldsmith, W. S. Metz, Emanuel Horvitz, J. C. McClenen and C. S. Fore, all of Connellsville.

Wenatchee, Wash.—The Wenatchee Apple Orchard Co. has let a contract for the sinking of a 300-ft., double compartment shaft to tap a 12-ft. vein of coal which diamond drill tests have shown underlie the company's entire 1100-acre property in the Moses Coulee district. Government and state experts have pronounced the coal equal to any mined in the state.

Columbus, Ohio—The George M. Jones interests, of Toledo, Ohio, operating the Ohio Collieries Co., in the Hocking Valley, and the Cambria Collieries Co., in eastern Ohio, will not fill the vacancy created by the resignation of W. Guy Srodes, assistant general manager, recently announced effective Dec. 16, but the position will be filled by G. S. Jones, secretary of the companies.

Philadelphia, Penn.—By the installation of new pumps at the Lardner's Point and Roxborough pumping stations, the city water department has effected a saving in coal alone of 20 tons per day at each plant. It has only been a year since that by the introduction of new stoking devices these plants were enabled to change from rice coal to the smaller anthracite sizes.

Toledo, Ohio—The Hocking Valley docks at this place loaded the last coal for the season on lake vessels during the past week. The amount loaded was 29,144 tons. The total loaded by the docks for the season was 5,161,626 tons as compared with 4,937,000 tons during the season of 1917. The season as a whole was one of the most successful in the history of the lake trade.

Atlantic City, N. J.—The Board of Directors of the National Coal Jobbers' Association, at its meeting held here on Dec. 5, decided to change the name of the organization to the American Wholesale Coal Association. The change becomes effective on Jan. 1, 1919. George M. Dexter, of Dex-

ter & Carpenter, New York City, is the president. L. Romanski is the secretary-treasurer of the association.

Oklahoma City, Okla.—The Producers and Consumers Coal Co. has been organized at Miami, Okla., and charter has been issued by Secretary of State Lyon at Oklahoma City. The company is capitalized for \$100,000 and the incorporators are J. R. Cavanaugh, E. M. Smith and C. R. Jordan. The company owns leases to a considerable acreage of coal lands. It will mine coal and also conduct a retail coal business in Shawnee.

Harrisburg, Penn.—The Pennsylvania State Compensation Board has rendered a decision holding that a miner who injures himself in an effort to shut down mining machinery when a cable slips or other interference in operation occurs, is entitled to compensation when the accident is in discharge of his duties in order to prevent mishap at the works. The Board ruled that this is "an untoward event which is not to be expected."

Scranton, Penn.—In a suit brought by Herman F. Trager against the People's Coal Co. to recover for damages to his property brought about by mine settlements in West Scranton, the jury awarded plaintiff \$26,500. The verdict is the largest ever returned in a case of this kind in the county. The coal company made no denial that it was liable for damage, but objected to the price asked by Trager, and against any punitive damages. Counsel for the defense will ask for a new trial.

Columbus, Ohio—The properties of the King Coal Co. and the Tidewater Coal Co., located in the Pocahontas field and owned largely by C. H. Boardman, of Columbus, have been taken over for the purpose of operation by the Houston Coal Co., of Cincinnati. The shipping point is Vivian, Mr. Boardman retains his interests and the change was made to relieve him of much of the responsibility. A large part of the tonnage will continue to be sold through the Interstate Coal Co., of Columbus.

Louisville, Ky.—Coal men from various sections of the Ohio valley were present at the two-day session of the Ohio Valley Improvement Association, which adjourned on Dec. 12. The organization adopted resolutions calling upon Congress for larger appropriations to hasten the work of completing the nine-foot stage of locks and dams from Pittsburgh to Cairo. Attention was called to the fact that during the past fall more coal was handled through the partly completed locks and dams by means of artificial rises than ever before in the history of the river.

Orange, N. J.—The Edison Storage Battery Co. announces the appointment of George Simons as district sales manager of its Detroit district. Mr. Simons succeeds Bertram Smith, who was recently called to the main office at Orange, N. J., in the capacity of assistant general sales manager. Mr. Simons has been associated with the Edison Storage Battery Co. for the past three years. He has had valuable experience in storage-battery practice, and previous to his coming to the Edison Storage Battery Co. was for nine years associated with the old National Battery Co., Buffalo, N. Y., and with the United States Lighting and Heating Company.

New York, N. Y.—The advisability of separating the Byproduct Coke Producers' Association into two groups was discussed at a meeting of the organization in the Hotel Knickerbocker this city, on Monday and Tuesday of this week. The object is to have the producers east of the Mississippi represent one group and the producers on the Atlantic coast and Middle Western points represent the other group. With the fuel restrictions practically removed, it was explained at the meeting it is intended to acquaint the public with the possibilities of coke, with a view of increasing its domestic consumption. Among the speakers was W. S. Blauvelt, Director of the Division of Coke of the Fuel Administration. J. D. Forrest, of Indianapolis, presided.

St. Louis, Mo.—Recommendation has been made by John C. Hall, director of enforcement of fuel regulations in Missouri, to the enforcement division of the Federal Fuel Administration that the St. Louis branch of the Searls Coal Co. be required to refund to the Light and Development Co., of St. Louis, \$2,269.88, which it is alleged to have collected through overcharge for coal. The complaint of the light and development company is that since July 5 it has been charged by the Searls company \$2.17 a ton for coal described as modified mine-run, which was in reality 2-in. screenings, for which a charge of only \$2.05 should have been made. E. B. Cullinan, manager of the company, called before Hall, refused to make a statement.

MARKET DEPARTMENT

Weekly Review

No Change of Any Account in Market Conditions—Soft Coal Buyers Not Eager for Fuel—Many Mines Forced to Curtail Operations—Anthracite Situation Improving

NO CHANGE of any moment can be looked for in the coal market until the arrival of real cold weather. Bituminous coal is plentiful in spite of the fact that output has fallen off considerably during the past two months. Consumers of soft coal are resorting to their reserve stocks for their current needs, not coming into the market at this time in the belief that the elimination of Government prices is imminent and that coal will be cheaper before long.

As a direct outcome of the decision on the part of buyers to stay out of the market many mines are working only part time, particularly in the Middle West, where only the demand for railroad coal prevents complete cessation of operations at a number of plants. Government prices are holding up rather well.

Present industrial requirements of those who have no large stocking facilities are being filled without any difficulty, bituminous production being maintained at an average of 1,835,000 net tons a day. The total output of soft coal from Apr. 1 to Dec. 7 of the present coal year is placed at 420,731,000 net tons as against 382,708,000 net tons for the like period of 1917.

No extremely urgent need for anthracite coal is in evidence. Production increased slightly during the week ended Dec. 7, with the shipment of 1,807,000 net tons. The total hard-coal output from Apr. 1 to Dec. 7 is 68,778,000 net tons, compared with 70,397,000 net tons in 1917.

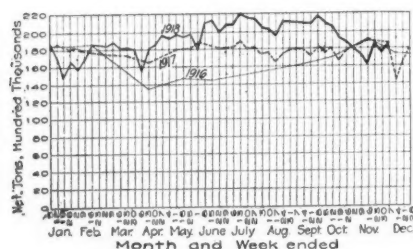
Weather conditions have been favoring the consumer of anthracite, and the educational campaign inaugurated by the Fuel Administration to teach users

the utility of the smaller sizes of hard coal has helped ease the situation. It has resulted in somewhat decreasing the demand for the hitherto favored larger sizes. The Fuel Administration has demonstrated that Buckwheat No. 1 can be burned efficiently and economically in household ranges, and it would prove no surprise if consumers showed a more decided preference for this size in the future.

There was a time when pea coal was considered a steam size solely; now it has taken its rank as a domestic size. No fear need be entertained of a coal shortage at any time if more consumers turn to the use of the smaller coals, as these are always plentiful and cheaper than the larger coals. When handled intelligently the small sizes give just as satisfactory results as the larger sizes, which are in short supply.

WEEKLY COAL PRODUCTION

Production of bituminous coal in the week ended Dec. 7 is estimated at 11,008,000 net tons, an increase compared with the week of Nov. 30 of 1,312,000 tons (or 13 per cent.) but 1,135,000 tons (or 10 per cent.) below the corresponding week of 1917. From the reports of operators it is estimated that the average number of days worked in Thanksgiving Day week were 5.3. The average daily output that week is shown as 1,830,000 tons compared with 1,835,000 tons in the week of Dec. 7,



a six-day week. The influenza epidemic is still interfering seriously with production in the eastern fields, and production of domestic sizes of coal in the fields supplying the Atlantic seaboard and southern states is not up to requirements.

Production of anthracite in the week ended Dec. 7 is estimated at 1,807,000 net tons compared with 1,613,000 tons the previous week and 1,778,000 tons in the corresponding week of 1917. The total production from Apr. 1 to date is estimated at 68,778,000 net tons compared with 70,397,000 tons in 1917, a decrease of 1,600,000 tons, equivalent to about 850,000 tons of domestic sizes.

Reports from the railroads for the week from all districts compared with the week ended Dec. 7 show increased shipments from all districts compared with the week of Nov. 30. Compared with the corresponding week of 1917, the only districts

recording greater shipments were Fairmont, Ohio, southern West Virginia and southwestern Virginia.

The final report of Lake shipments for the season shows 28,153,317 net tons of cargo coal, a new high record, and slightly in excess of the program of 28,000,000 tons established early in the season. Shipments in the week ended Dec. 7 were 80,580 tons. It is interesting to note that although the Lake traffic in 1918 was greater than in 1917, the vessel fuel used was less than 1,600,000 tons in 1917 against 1,300,000 in 1918. This is attributed to the fact that with fewer vessels in the trade in 1918 there was less movement of steamers either up or down the Lake without cargo.

Bituminous coal shipped to New England for the week ended Dec. 7 is estimated at 328,897 net tons, a decrease of 8.6 per cent. compared with the week preceding. Rail shipments—92,352 net tons—decreased 12.4 per cent. and tidewater shipments—236,545 net tons—decreased 0.7 per cent. Baltimore was the only harbor to report an increase in shipments. Shipments from Hampton Roads decreased 14.3 per cent. and from New York 4.8 per cent.

Total shipments for the coal year to date are estimated at 20,038,000 net tons, or 0.8 per cent. ahead of budget. Rail shipments, amounting to 7,573,311 net tons are 5.4 per cent. ahead of budget, while tidewater shipments, amounting to 12,464,586 net tons are 1.8 per cent. behind budget. Shipments from New York, Philadelphia and Baltimore are slightly in excess of budget, but Hampton Roads is 3.3 per cent. behind.

Tidewater shipments of bituminous coal for the week ended Dec. 7 were 718,738 net tons, 10.8 per cent. higher than for the week preceding. Shipments from Hampton Roads decreased slightly; New York and Philadelphia increased 21.3 per cent. and Baltimore, 5.2 per cent. For the coal year to date tidewater shipments amount to 31,550,000 net tons, approximately 10 per cent. ahead of the budget established by the Fuel Administration. Of this total nearly 15,000,000 net tons have been shipped through New York and Philadelphia, 2,848,000 net tons through Baltimore and 13,785,000 net tons through Hampton Roads.

The production of beehive coke in the week ended Dec. 7 is estimated at 543,000 net tons, an increase compared with 522,000 tons in the week of Nov. 30, but a considerable decrease compared with 695,000 tons in the corresponding week of 1917. Production of beehive coke is now below that of byproduct coke, but the total coke output is above that for last year. Operators in the Connellsville, Greensburg and Latrobe districts report for the week ended Dec. 7 the production of 307,112 tons of coke compared with 291,972 tons the previous week. The gain was the result of better labor supply. The same operators shipped 159,700 tons of coal in the week of Dec. 7 compared with 160,500 the week of Nov. 30.

The production of byproduct coke in the week ended Dec. 7 was 578,139 net tons compared with 572,239 tons the previous week and 429,000 tons in the corresponding week of 1917. The percentage capacity produced is reported as 88.7 against 87.9 in the week of Nov. 30. Losses aggregating 5.1 per cent. of capacity are reported as the result of repairs being made to plants and 3 per cent. for other causes, among which are noted operation on extended working time and using coal from stock pile that gave coke difficult to "push." The loss of 37 per cent. of production because of no market for byproduct coke in Massachusetts is to be noted.

BUSINESS OPINIONS

Marshall Field & Co.—Current wholesale distribution of dry goods is running about even with the corresponding week of 1917. Road sales for immediate and future delivery were less than for the same week of last year. The number of customers in the house was about the same. Retail business in holiday merchandise continues excellent. Collections are good.

Dry Goods Economist—During the week two important developments have occurred in the textile situation. First, the Government has decided to sell gradually its stocks of wool. Auctions will be held periodically, but efforts will be made to avoid any unnecessary or sudden effect on prices. Second, the Department of Agri-

culture has announced that its final estimate of this year's cotton crop is 11,700,000 bales, exclusive of linters. This quantity is approximately 400,000 bales in excess of last year's yield. Some of the big woolen and worsted plants that had been seized as enemy-owned have been sold by the Alien Property Custodian. The other seized plants are to be sold in the near future.

American Wool and Cotton Reporter—That wool held by the Government is to be offered for sale at public auction is an announcement greeted with considerable satisfaction by the wool trade. It is understood that the amount of wool to be offered at each sale will be such "as in the opinion of the wool experts the market can easily absorb." A minimum reserve price will be fixed, below which no bids will be entertained. Removal of restrictions against foreign and speculative short selling cotton contracts has put the trade in a more satisfactory position. Cancellations are raising ructions in the cotton market but there does not seem to be any question that practically all of the goods manufactured for the Government can be disposed of.

The Iron Age—Unexpectedly the general committee of iron and steel manufacturers reported to a large meeting of producers in New York, Dec. 9, in favor of a "moderate" reduction in prices of pig iron and all rolling mill products effective Jan. 1. It is expected that pig iron will be reduced \$3, plates and shapes \$5, and sheets and tinplates, \$10 per ton, with other prices in proportion. The past week has brought further export and domestic business to the steel companies, some of them booking more than their current output; but, as heretofore, it was an aggregate of small replenishing orders. The belief that with the heavy cancellations by England, France and the Government at Washington, demand for some months would fall below capacity is still the dominant consideration.

Bradstreets—Plans are being formulated by leading lines to vigorously go after business in the new year, but it is conceded that the campaign will have to overcome the waiting attitude of smaller dealers, most of whom are strongly wedded to the belief that prices will work downward. Best reports as to distribution come from the northwest, trading in that zone being singularly free from the uncertainties that beset every other part of the country. In industrial lines, readjustments of war contracts, branching out for peace-time trade, and the absorption of labor that has been liberated from war work, proceeds apace. Labor is restive, fearing the effects of readjustments, and supplies, especially of less efficient help, are better, but as yet congestion is not in evidence, and the government is endeavoring to place men before freeing them from camps.

Atlantic Seaboard

BOSTON

Situation is mixed. Water-borne coal goes begging while all-rail deliveries are increasingly hard to get. Trade much interested in probable attitude of labor. Only light inroads made on reserve stocks. Hampton Roads shippers at loss to place coal here are using every means to load offshore or ship west. Little inquiry for coals over New York piers. "Storror bituminous" now practically cleaned up. Rail movement drops below 300 car daily average. No indications of lower prices f.o.b. mines. Talk of spring prospects. Differentials a matter of some anxiety. Coastwise freights the important factor. Anthracite receipts show slight improvement. Complaint of volume of desirable sizes still coming forward for distribution by New England Fuel Administrator. "Independents" not held to the line as strictly as companies. Retailers getting overstocked with pea while fuel authorities solicit orders for stove and chestnut.

Bituminous—The current market is in a confused state. At the various distributing plants where coal is forwarded inland it is next to impossible to dispose of cargoes in the open market, and at the same time the few buyers who are trying to secure deliveries all-rail find it difficult to do so for anything like prompt shipment. We have steamers in over-supply along the coast and we have long lines of empty coal cars stored on the railroads, although for somewhat different reasons. All-rail the coal is not being produced, and coastwise there are no buyers. Everybody is wait-

ing to see what will happen and from day to day, there are almost no developments. The present wide differential between rail and water delivery, in favor of the rail route, is one element in the situation, and the reserve stocks now in New England are what have saved buyers here from what would have been a most embarrassing situation. It so happened that rail shipments sagged off just at the time when New England consumers had become so well stocked that all buying interest disappeared. If the reserve supplies had not been taken on early and steam-users had been obliged to buy water coal to a much greater extent at the higher price level there would have been a lot of dissatisfaction. It may be that stocks are larger than ever before, but as it has turned out it has been no small advantage to a great many to have had their coal all-rail and during a season when it could be had in volume.

The only price shading that has come to notice has been in the case of water coal at distributing points like Boston and Providence. These instances are very few, however, for all the regular shippers have been extremely cautious about sending coal forward unsold. Needless to say every contract has been right up to quota on water borne coal and only the more reckless would take chances with such a market as prevails at all the New England re-handling points. Tidewater coal with its high marine freights and demurrage and other charges is going begging at this writing, and it is doubtful if there will be any inquiry worth mention until March or April.

All-rail prospects are bound up with the probable attitude of labor. Current reports of idleness in the region and generally light production with a great surplus of cars tend to show that output will not increase until the market calls loudly enough for increased shipments to eliminate all possibility of a reopening of wage discussions. The mine-workers will make every effort to keep wages on at least their present level and one of the most effective methods to that end will be a decreased production until the market is again in shape to take coal in large tonnages. It looks therefore as if there would not be any free movement of coal until present stocks have been worked down.

The number of bottoms loading at Hampton Roads for New England has steadily decreased and practically all the agencies are hard put to it to find outlet for the heavy volume of coal now being poured from Pocahontas and New River districts to the piers. Suspended shipments are the order of the day, and every effort is made to increase shipments offshore, to the line trade, and of prepared coal for the west. Difficulties of export license and securing ships for certain destinations are clearing up somewhat, and it is predicted that offshore dumpings will continue to increase.

Coal over the New York piers is also rather druggy. Inquiry on Long Island Sound has again dropped off, and it is likely there will be little call for deliveries in barges for the balance of the winter, unless the shortage of rail coal should become really acute. The better grades are moving rather easily, but less desirable coals meet with practically no demand. Bunker requirements are not yet heavy, but it is certain they will improve.

For the first ten days of December the receipts of bituminous at the five New England gateways have averaged only 290 cars, company fuel included. Compared with the November figures this is a further drop of nearly 100 cars daily, or less than 40 per cent. of the movement during September. Perhaps this is the most striking commentary that can be made today on the New England situation. It is on the basis of such facts as this that the trade is discussing spring prospects. The possibility of lower prices f.o.b. mines is heard less and less as the season advances, but there is a great deal of anxiety on the part of water shippers as to whether coastwise freights will be modified in season for next year's business. If the present differentials are maintained between water and rail deliveries the general state of the market will be decidedly awkward for everybody concerned, and it would seem that some measures are bound to be taken before long to remedy the discrepancy in price between the two routes. Marine freights then are the important factor in all calculations for the future.

Anthracite—Receipts of domestic sizes show some improvement, although the increase has not been large. The first 10 days of December showed a daily average of 371 cars as compared with the November average of 333 at the five New England gateways. By water there has also been a slight improvement, but tonnages

are apt to be misleading because so large a proportion of current shipments by water are sizes like broken and pea.

Through the anthracite committee requisitions and directions continue to be filed for stove and chestnut, the most eagerly sought sizes. Besides the sheaf of other demands through this channel there are still approximately 100 cars daily being shipped to the order of Mr. Storror for disposition through his office. Retail dealers who have regular connections with large shippers are being told their requirements for stove and chestnut must wait until Government demands are met, and at one and the same time, the New England Fuel Administration, for instance, is in the proud position of actually soliciting consignments in order to dispose of the Government stove and chestnut being shipped to its order on a preferred basis. The Rhode Island Fuel Administration recently made an official announcement that all talk of a shortage of stove and chestnut on the part of retailers was nonsense, for that office had available for sale eight cars every day.

The plain truth of the matter is that the New England Fuel Administration should now cease taking "emergency" coal forthwith, for there are today no real cases of distress that cannot be met with better satisfaction and far more intelligently through regular trade channels. Acting on figures that are far astray, and taking no account of local conditions, embargoes are being declared against communities that are just getting on from hand to mouth, while in other instances retailers who have already had generous shipments are being flooded with "free coal," apparently for no other reason than their ability to send certified checks in advance.

NEW YORK

Surplus of anthracite steam coals puts salesmen on the road for the first time in nearly two years. Stove and chestnut sizes scarce, with egg and broken easier. Householders take to using buckwheat. Retail dealers well loaded with small coals. Present condition of bituminous market due to small production. Weather keeps down consumption and demand. Bunker coals move quickly.

Anthracite—Receipts here during the past week show a falling off from the previous week, but the increase in production reported the last of the week is encouraging. The lack of domestic coals is expected to be overcome by the middle of January. In the meantime the public has been educated to use pea and No. 1 buckwheat, which not only saves money for them now but will prove a greater benefit in years to come.

During the week ended Dec. 13 there were dumped at the local piers 6098 cars of all sizes of anthracite, as compared with 6127 cars the previous week.

The heavy call for stove and chestnut continues, but shipments of these sizes are slow. In many cases where they have been ordered by the consumer and where coal is urgently needed other sizes are substituted, provided the buyer is willing. However, there are many instances where the buyer, having had two-thirds of his order delivered, prefers to wait for the other one-third rather than take other sizes of coal.

The ending of Lake shipments this week will mean the diversion of a portion of that tonnage to this market, while further additions will be made as a result of the satisfactory conditions as a whole existing in New England, although there are some of the smaller towns along the coast that have not yet received their full quotas.

Broken and egg sizes are easier than either stove or chestnut, and because of the warm weather the entire situation is "looking up." Many wholesale houses, for the first time in nearly two years, have sent salesmen out to visit the trade. For the present they are looking for buyers for the steam sizes, but after Jan. 1 it is expected the heavy demand for all sizes will have subsided and buyers will be wanted to take care of the surplus.

Pea and No. 1 buckwheat are tightening because of the efforts of the dealers to substitute these coals for the larger domestic sizes. Rice and barley are long, and cuts in regular prices have been reported in order to move the surplus. Quotations ranging from \$1.75 to \$2 at the mines have been reported for barley.

The retail dealers are well supplied with the small sizes, some of them having so much in hand that they are refusing additional shipments. Labor troubles are facing the dealers in Queens Borough, their drivers asking a wage increase of \$5 per week, with three deliveries a day. The dealers in other Boroughs may be asked to make similar increases shortly.

Current quotations, per gross tons, f.o.b., tidewater, at the lower ports are as follows:

Circular Individual		Circular Individual	
Broken...\$7.80	\$8.55	Buck...\$5.10	\$5.90
Egg.... 7.70	8.45	Rice.... 4.65	5.10
Stove... 7.95	8.70	Barley.. 4.15	4.30
Chestnut 8.05	8.80	Boiler.. 4.60	
Pea 6.55	7.30		

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates. Prices for buckwheat, rice, barley and boiler are not fixed by the Government.

Bituminous—The demand for the better grades of coal is far in excess of the available supply. With the removal of the coal assigned to Pools Nos. 4 and 10 the coals suitable for commercial purposes have been greatly reduced. Coals for bunkers are moving freely, and there are sufficient bottoms here to take all that can be obtained. While the high grades of coals are scarce there is a fair supply of other grades, one shipper stating that early in the week he knew of 10 boat loads in the harbor waiting for buyers.

The market is uneasy. Buyers are in a quandary as to which way to jump. Many are of the opinion that notwithstanding the reports from Washington that the price restrictions will not be removed for the present, there will be something doing soon in that direction. Because of this uncertainty they have no desire to keep their bins filled. With the price restrictions removed some of the trade believe the market will settle to a steady basis.

The closing down of various branches of the steel industry has caused a surplus here of gas coal, but there is not sufficient to result in a price reduction.

Producers do not look for any considerable increase in production until after the New Year, and even then much will depend upon conditions such as transportation and temperatures. At present large consumers and public service corporations are well supplied with fuel.

Dumpings at the local docks for the week ended Dec. 13 amounted to 5250 cars, a decrease of 1200 cars from the previous week's figures.

Operations this week were slow. Some openings were closed while many others were able to work little more than half time because of the lack of help. Reports brought back from the mines by representatives of local houses indicate that many workers are suffering from illness and that those who are convalescent are not yet able to take up their regular work. Meantime empty cars are piling up.

Producers here are interested in the announcement coming from Washington that the War Trade Board has agreed to allow Holland 100,000 tons of coal, which is to be shipped in Dutch bottoms.

The first week of the existence of the Exchange Bureau of the Wholesale Coal Trade Association of this city, which opened for business on Dec. 9, proved satisfactory to the officers of the association. There were many inquiries and the trade appeared to be interested.

Current quotations, based on Government prices at the mines, net ton f.o.b., tidewater at the lower ports, are as follows:

	Mine Gross	F.o.b. Gross
Central Pennsylvania:		
Mine-run, prepared or slack.....	\$3.30	\$5.45
Upper Potomac, Cumberland, and Piedmont Fields:		
Run-of Mine.....	3.08	5.23
Prepared.....	3.36	5.51
Slack.....	2.80	4.95

Quotations at the upper ports are 5c. higher.

PHILADELPHIA

Anthracite demand easing off. Mild weather continues. Better shipments. Administration modifies storing order. Cold weather needed to sustain individual prices. Stove and nut tight. Pea and egg quite free. Buckwheat only strong steam size. Bituminous unchanged. Good supply. Government prices still effective.

Anthracite—The trend of sentiment in regard to the local situation seems now to be running in one direction. The pessimists are gradually changing their views and now admit they were unduly disturbed. It is probable the unusually wild weather has done much to calm the fears of the seller as well as the buyer. Householders with a few tons in the cellars are certainly not showing the same anxiety to have their orders completed, and in most cases are accepting the assurance of their dealers that there is no cause for alarm.

The consignments to the city have not been unusually heavy, but they have been wisely distributed. The largest operating

company's shipments have been most substantial. It was this trade that was becoming panicky, because it had been almost neglected for about six weeks. It is believed that before the first of the year the entire situation will be well in hand.

Dealers who have unfilled orders in the suburban and outlying districts have been informed by the local fuel administrator that they may deliver up to 100 per cent. on egg and pea sizes. He explains that this is to prevent any accumulation of these apparently free sizes and to keep equipment moving. However, where dealers have a stock of other sizes that warrant it, permission will be given to deliver these sizes up to 100 per cent. of orders on hand, when a written application is made for same. This latest ruling indicates better than anything else the sudden change in the situation, for it was only two weeks ago that the fuel administrator notified all dealers that they must not deliver 100 per cent. of any order previous to Jan. 1.

There has been considerable talk in trade circles as to the position of the retailer when business connections are only with the smaller operators and brokers, whose prices are 75c. and 90c. higher than the big companies. The thought seems to be that if the Federal Fuel Administration retains control until Apr. 1, these rates will remain effective, because after the strenuous efforts to gain this point the individual operator will hesitate to change his position. If the retail business falls off before Apr. 1, which is far from improbable, coal will be free and the dealers who handle individual coal are wondering how they will compete with the dealer who purchases his supply from the companies.

Stove and chestnut are still scarce and most yards are bare of both sizes. This is usually because shipments are delivered to the consumers' cellars as soon as received. While buyers have not been able to accumulate stocks of these sizes, yet we have come across two large dealers who had all sizes for sale, one of them going so far as to advertise the fact in his office window for an entire week. Egg is quite free, and it is probably only from the Germantown and Chestnut Hill sections that the demand is for a substantial tonnage. A number of dealers have held orders on this size with their shippers, and late in the week one of the large companies was finding this size to be quite a problem for it to handle. Pea too is easy, and a number of dealers advise us they have suspended shipments of it for a time. This size is sure to come into its own later in the season. One dealer who handles an enormous tonnage of this size, on account of his 1916 business, finds himself with an extra heavy tonnage now on hand and moving slow for this time of year. He explains that last year a large portion of his trade got so used to the larger sizes that they have found out the economy and convenience of their use despite the higher price and are now insisting on the larger sizes.

In the steam trade buckwheat is quite brisk and one house reports selling at \$4.50 here, and 10c. higher in New York. Rice is weaker than buckwheat, but much stronger than barley or culm, which are flat. The piles of these latter in the storage yards of the big companies are mounting.

Bituminous—There is no particular change in the situation. Coal is fairly plentiful, especially the low grades. The good coals are all quickly taken. There has also been some increase in production, with the car supply about equal to production requirements. Some of the wagon mines are still able to get out a little tonnage by making use of flat cars, which is the only class of equipment they can get now.

BALTIMORE

Heavy movement of soft coal continues. More of better grades released on open market. Some sales below maximum. Big improvement in supply of anthracite promised.

Bituminous—With a general industrial supply of ample proportions and demand not overactive, the flow of coal from mines to this section is of such a nature as to require side-tracking at production points at times to prevent undue congestion at plants that can handle no more fuel for the present. The same conditions exist at the terminals here. Coal on demurrage for several days at a time has been noted here recently. This is striking, and shows the effect of the stoppage of war-order work in this and other nearby sections.

Georges Creek Tyson and other grades of more or less desirable nature are appearing on the market with increasing frequency. Some high-grade coals have also been released from pools that were until quite recently considered strictly Govern-

ment distribution groups. The trade as a whole views with satisfaction the semi-official announcement from Washington that there has been abandonment of a plan of sudden cancellation of zoning orders and of all price regulation, and to substitute therefore a more gradual plan of release after business generally had settled down to post-war conditions. It is felt that this will prevent the overflow of higher grade coals into some sections where dealers and distributors are heavily stocked with inferior coal bought at full Government prices. Meanwhile there can be no doubt that coals are now offering here in some cases below the Government maximum. Some fuel, not those of best grade, have been offered here at anywhere from 15 to 40c. off the Government maximum.

Anthracite—The hard-coal situation shows signs of improvement. The mild winter so far has been a tremendous factor in easing the situation. The past week saw a considerable movement here, and much needed nut and some urgently needed stove coal came through. One of the largest producing companies, which was about 30 per cent. short of its usual annual movement to dealers here, also sent a promise that, now the New England and Northwestern movement had let up, it would attempt to make up the deficiency in the next thirty days or so.

The local fuel administration is planning, as soon as everyone has some coal in their cellars, to allow delivery of one-half of the one-third undelivered to most customers under the two-thirds delivery plan of the administration.

Lake Markets

PITTSBURGH

Production only slightly increased. Gas coal in demand. Market generally steady.

There has been only a slight further increase in coal production in the Pittsburgh district, but apart from gas coal the supplies have been sufficient to demand. There is no snap to the market, but if there are any actual price concessions they apply only to poorer and less desirable grades. Railroad requirements continue heavy. As usual, high-grade gas coal is in short supply for steel mills and gas works.

There has not been much rearrangement as yet in the distribution of coal to by-product coke ovens, although many switches are desired by the coke producers in order to provide them with coal more suited to their work. In several instances Connellsville coal is sought in larger quantity, but supplies from that quarter are but slightly increased. When everything is working smoothly as to distribution, a large tonnage of Pittsburgh district coal will still be used for byproduct coking.

Many consumers are drawing upon stock piles as they are not seriously concerned as to the continuance of supplies during the winter and think there are considerable chances of the market's easing off. A report from Washington is that the Fuel Administration intends to end its work by Dec. 31, except as to anthracite, but it is not at all certain that the body will continue to function for the first three months of the new year.

The market remains quotable at Government limits: Slack, \$2.10; mine-run, \$2.35; screened, \$2.60, per net ton at mine, Pittsburgh district.

BUFFALO

More anthracite for the city. Too much bituminous everywhere. Jobbers confident. Restrictions going. Better tone all through the trade. Lakes closing.

Bituminous—Jobbers grow more confident every day. With the existence of a surplus of coal, operators are returning to them and old relations are being resumed. So much coal is in the hands of consumers that they are indifferent to the market, and buyers are no longer anxious over the supply. They purpose using up most of their coal before purchasing more, as coal can be had when wanted.

In the dropping of restrictions one after another, bituminous sellers see a chance to make their old April contracts again without any Government supervision. At the same time they do not like the idea of giving up the arbitrary price for many of them think that if this is done before the supply on hand is reduced materially the price will decline. Operators are saying that they will shut down rather than stand low prices.

The situation in Canada has been serious to the shipper. Coal was piled in there till nobody could sell any, and there is a

surplus there yet. Even the munition plants that shut down offered their surplus coal on the market, and the situation was about as bad as it could be. The Canadian license to shippers has been dropped, which means that the authorities are no longer afraid that the supply will run short.

Anthracite—The change has come. The lakes are closing and coal is pouring into the city, sometimes faster than the retailers can handle it. Other points in the all-rail district hereabouts are also getting more coal. It appears that the New England demand has been pretty well satisfied, so that there is plenty for this section. Already the feeling is improved. One big factor in the situation is the weather.

The lake trade closes with all upper lake ports pretty well stocked up. There was a shortage in Milwaukee, but that has also been made up. Shipments for the week are mainly to Milwaukee, 66,300 tons; to Chicago, 12,500 tons, and to Duluth, 12,000 tons, a total of 90,800 tons. The final cargo is not reported, but the season is practically at an end, with shipments of 3,557,000 tons, as against 4,106,598 tons last season. The season has been prosperous; scarcely any losses on the lakes has been reported.

CLEVELAND

Some large steam-coal buyers stand ready to take fair-sized blocks of regular No. 8 at 25 to 35c. off the Government maximum, but this business so far has not proved attractive to operators. Stripping coal continues to be offered at marked reductions, while it is believed some No. 8 coal has failed to bring the top price. Anthracite receipts are beginning to increase.

Bituminous—In their efforts to move surplus stocks at the mines, several operators have come across a couple of large steam-coal users in northern Ohio who have made known their willingness to do business at a concession of 25 to 35c. from the Government schedule. These interests have not yet felt the curtailing effects of the signing of the armistice or have made the change from a war to a peace basis without a ripple. Consequently, not having added to their stock piles for about 30 days, their stocks are fast being depleted. Another 30 days will find them actively in the market, unless they place their business meanwhile. So far, it appears, no operator has been so pressed or has reached the state of mind where he is agreeable to breaking through the top of the market to this extent.

Barring a few spots where pessimism reigns unchecked, a feeling of optimism pervades the local market. Operators agree freely that every element entering into the situation is unfavorable. The lake trade is at an end. The mild weather has wrecked retail business, and stock piles abound everywhere. But, operators point out, another three months will see coal again moving toward lower lake ports. The industrial readjustment is being made with a great deal less flurry than anticipated, and unless business receives a severe check shortly, steam-coal users will be back in 30 to 45 days. If the trade can weather December and the beginning of January without a break, it is safe, in the opinion of many well informed operators. It is of this reasoning that the determination to shut down before shading is born. The market hinges entirely upon the ease with which the readjustment is made.

Despite insistent denials that any standard No. 8 coal has been sold below the Government price, the fact remains that more than one retail dealer claims to be able to locate a few small blocks at about 25c. off, a 25-cent reduction apparently representing the idea of buyers where the price list should take a fresh hold. Stripping coal is consistently offered at 50c. to \$1 off the top price, with much offering and little taking. This action on the part of stripping operators is weakening—at least sentimentally—the position of standard No. 8 coal.

Production again is on the upgrade, and it is believed influenza has been conquered. The report of the Pittsburgh Vein Operators' Association of Ohio for the week of Nov. 30 places shipments at 5264 cars, compared with 4742 cars the first week preceding and 4760 the second. Many mines in eastern and southern Ohio are being worked only half time, while several have been closed for several weeks—because of inability to market coal with labor and material costs so high, the mine workers have been pointedly told.

Anthracite—By paying a small independent \$1.05 more a ton than the larger operators demand—of which 30c. represents commission—one retail dealer is able to get shipments of pea at the rate of five to six cars a week. This finds ready takers at a retail price of \$10.35 a ton, delivered. The continued warm weather has virtually

knocked the bottom out of retail consumption and the calls for anthracite have fallen off markedly.

DETROIT

Undistributed stocks in retailers' yards and large reserves in possession of steam-coal users curtail bituminous trade. Anthracite supply is short.

Bituminous—To the presence of too much bituminous coal in Detroit and the fact that considerable of it is stock of an inferior quality jobbers ascribe the present rather inactive condition of the local market. For some time past wholesalers and jobbers have found it difficult to book orders for further supplies.

In the case of many of the large consumers of steam coal, reserves seem to have been increased to unduly large proportions by the fear that the supply of coal might be cut off or made uncertain with the coming of winter. In their anxiety to escape perils of deficient supply, a number of buyers are said to have released orders to agents with apparent disregard of the total of the tonnage represented, until shipments began arriving. They contrived also to accumulate considerable of the coal sent into Detroit by the fuel administration from mines in Illinois and Indiana.

Because of the more-than-sufficient reserves built up through these activities dealers find the steam-coal users are not now in receptive mood, though the jobbers are again able to supply the more desirable grades of coal from West Virginia and Ohio. These for a time had been withheld from the steam plants.

To retail dealers also are overstocked with bituminous coal, while the weather of the last six weeks has not been sufficiently severe to create an incentive for buying among their customers. The domestic consumers also are showing an inclination to discriminate in favor of coal of a better grade or in more desirable form than the stock many of the retailers are able to supply. The City of Detroit has been asked to assist the retailers by taking over some 25,000 tons of the excess stock.

Anthracite—Supplies of anthracite in the yards of nearly all dealers are low, while the small volume of receipts scarcely meets the requirements of the classes of consumers that, under the fuel administration regulations, are permitted priority of supply. Were weather conditions to become severely cold, dealers would be besieged with calls for anthracite which they could not provide.

COLUMBUS

The coal trade continues quiet in every way. Steam demand is small and domestic trade is also reduced to a minimum because of continued warm weather. Prices are not demoralized, although some cutting is reported. The tone of the trade is not good.

The coal trade is now "marking time," so to speak, until readjustment is started and until reserve stocks on hand are used up. As a result there is little demand for any grade of coal and production has been reduced. Coal men in all departments of the industry believe that present conditions are only temporary, and that there will be a much better demand after the first of the year. Steam trade is quiet, as surplus stocks in the hands of consumers are extra large. Purchasing agents are loath to increase their fuel stocks until the trend of affairs is seen. Many plants have fuel stocks to last for three to five months and additional orders are out of the question. The smaller consumers are not worrying about their stocks, believing that they can buy at any time. Railroads are not taking any large amount and that is cutting into the volume. Steam prices are being shaded, but it is realized that orders can not be secured by cutting, as the buying public do not want the coal at any price.

The domestic trade is also quiet, due largely to the continued warm weather. The season so far has been very unfavorable for the retail trade. About 75 per cent. of the users have their winters fuel on hand, and it will require a cold spell to bring the remainder in the market. Rural dealers are buying to a certain extent, as their customers are not as well stocked as city residents. Retail prices are steady at former levels and there is no general disposition to shade quotations. The differential between thick and thin vein Hocking has been removed, however.

CINCINNATI

Extremely mild weather continues to dominate market, while industrial uncertainty also holds down demand. Shipments are satisfactory, in view of this situation.

The continuation of extraordinarily mild weather has kept the demand for fuel down to a very low point, considering the lateness of the season, as domestic consumers have not been forced into the market to the

extent which is usually the case at this time of the year, especially with the high average of stored coal on hand. When it is considered, in connection with this quiet state of the domestic market, that the steam side of the market is equally quiet, or more so, it can be seen that the trade, rather to its surprise, is facing an unusually dull period.

The decided uncertainty of all branches of manufacturing as to the future, and the quandary in particular of those numerous industries which have for several years past been engaged almost wholly on war work, makes for cautious buying on their part, and also accounts for very limited needs by them. Many plants, in fact, have virtually nothing to do just now, and will have little to do until business has had a chance to adjust itself to peace, and peace demands have an opportunity to make themselves felt, which it is hardly expected will happen in less than several months.

The recurrence of the influenza epidemic, after it was thought to be on the wane, is also having its effect on business, both at the mines and among industrial consumers of coal. While the disease seems to be less virulent, judging by the proportion of fatalities, the number of cases is alarmingly large, and is hampering industry seriously. In spite of this continued handicap at the mines, however, production measures well up to the limited requirements of the trade, on account of the conditions named.

LOUISVILLE

Demand for all grades draggy and poor. Producers and jobbers making a hard drive for business. Retailers waiting for telephones to ring, and trying to collect old accounts.

December half gone and no business coming and none in sight, appears to be the situation in Louisville. Kentucky operators, eastern, western and southeastern, are all trying hard enough to land business, and their selling organizations are working overtime. However, there is very little industrial demand, while domestic demand is at a standstill as the weather has been so mild that the really poor man hasn't had to start a fire as yet. Western Kentucky nut and slack, also thin screenings, are being sold at considerably under the market. Prices show much weakness, although locally the trade is making a hard drive to hold up Government prices in a retail way.

It is doubtful whether a similar situation to that now existing has ever been known at this time of year in the coal trade, as the bottom has dropped completely out from under the demand, and it is merely a question of whether the market will shoot to pieces.

BIRMINGHAM

Inquiry brisk for both steam and domestic coal. Supply of both grades short of requirements. Production now badly crippled; will likely show little improvement until after holidays and subsidence of influenza.

There is a sharp and strong demand in the local market from all classes of steam users, and inquiries have been more plentiful and insistent the past week than for quite a while. Industrial plants, public utilities, railroads and furnace companies are reported as active in the buying movement. Undoubtedly the trade is stimulated by the approach of the holidays and the desire of users to stock up for the idle period at the mines, and the demand is further strengthened by the depletion of stocks in the hands of consumers some weeks ago, due to current receipts not being sufficient in some time to avoid resorting to the stock pile. Domestic coal is specially scarce, while the demand is strong and incessant.

Coal mining in Alabama is suffering seriously from a second visitation of the influenza, and there is so much sickness among the mine workers and their families that operations are badly handicapped and the output fell to 322,591 tons for the week ending Nov. 30, or a loss of about 36,000 tons compared with the previous like period. Little betterment in production can be expected until after the holidays.

Coke

CONNELLSVILLE

Coke still scarce. Furnaces concerned over possibility of early removal of Government control.

Production of coke in the Connellsville region has increased, but only slightly, and blast furnaces are feeling the effects of the reduced output that has now obtained for several weeks. While few furnaces are

banked, many are operating with reduced blast pressures so as to cut down the consumption of coke. While the epidemic of influenza is charged with the reduced output of coke, the disease is much less prevalent and output would probably be larger if the men were more anxious to work. Operators are not encouraging them as formerly, and seem to regard the curtailment in output as very far from an un-mixed evil by reason of its tending to support the market.

The quality of coke being made is decidedly improved as a result of the inspection system now in operation, whereby inspectors of the furnaces scrutinize coke before shipment.

Blast furnaces are much concerned over the possibility of the Fuel Administration relinquishing its control of coke prices Dec. 31. They fear a sharp advance in the market if this is done, as coke is decidedly scarce and indeed is generally scarce at holiday time. Pig iron prices are marked for a \$3 decline, in line with the recommendations the general committee of the American Iron and Steel Institute had prepared for submission last week to the War Industries Board, to make a price basis for the first quarter of the new year. While the War Industries Board refused to consider the matter, as it is relinquishing price control, the iron and steel producers will probably act on the schedule of price reductions just the same. With a \$3 decline in pig iron, furnacemen think they should have a lower price for coke. Many coke contracts have been made for the first half or all of next year. Some of these call for adjustment at the open market price in case Government control is taken off, but others provide that in such case the last Government price shall apply. Furnaces holding such contracts would therefore like to see the Fuel Administration reduce its price limit before it ceases functioning.

The market is quotable at Government limits, as follows: Furnace, \$6; foundry, 72-hour selected, \$7; crushed, over 3-in., \$7.30; clean screenings, over 3-in., \$5.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and Lower Connellsville region in the week ended Dec. 7 at 272,750 tons, an increase of 16,035 tons, and raw coal shipped at 194,091 tons, an increase of 2053 tons.

Buffalo—The scarcity still continues. All the furnaces in this territory, even those with byproduct plants of their own and commonly making a surplus, are asking for coke of the beehive producers. The shortage is not likely to last, as the labor shortage that has caused it is not expected to last. It appears that the demand for iron is to keep up, so the coke market ought to remain strong. Fuel coke is firm where it competes with anthracite, but not otherwise. Receipts of iron ore to December were 8,663,400 gross tons, as compared with 7,438,533 to the same time last season. A little will still come in this month.

Middle Western

GENERAL REVIEW

Market as weak as ever on all grades of bituminous. Too much coal is being produced for current needs. Talk of curtailing production to keep prices at Government maximum.

The coal market in this territory is uniformly weak, and will continue so for at least the next month or two. There has never been a time in the history of coal production in Illinois or Indiana when the production has been so large and the demand so small. Today, the market is weak on all bituminous coal, all grades and sizes, and the demand is lessening from week to week. It appears that every consumer of coal, factory or retailer, has more than enough fuel on hand for current needs.

It is well known that for the past month or so the mines of Illinois and Indiana have been producing much more coal than the zones allowed them can absorb. Some of the producers of the "weak sister" type have tried to force coal on the consumer by the price-cutting method. At first this means of obtaining orders met with some success, but after a short time it failed to prove effective.

It was also shown in a number of instances that the operator who remained firm and sold his coal strictly on a basis of "Government price current at time of shipment" had just as much business as the producer with cold feet who rushed out into the market and tried to sell his coal at a discount. It has been pretty conclusively proved, of late, that if the average buyer of coal is in the market, he is willing to pay the Government price for

his coal. He knows that the Fuel Administration has set a fair margin of profit on coal, and nine times out of ten he is willing to pay it.

The long and short of the present situation, or dilemma, rather, in this part of the United States is that too much coal is being produced. If any sort of order is to be maintained in the market, and in the coal industry, it will be absolutely necessary for the operators to curtail production. The object of shutting off on production would not be to increase prices, which is impossible, as they are controlled by the Fuel Administration, but to keep the operators from becoming demoralized through reckless price cutting and competition.

As a matter of fact the public have on hand today more coal than their immediate needs require, and in view of the fact that this coal was purchased earlier in the season, at full Government price, it will not help the standing of the coal industry with the public to offer coal now at substantial discounts from the various prices set by the Fuel Administration.

The resignation of Dr. Garfield came as a distinct surprise to the majority of the coal trade here, and the news of his withdrawal lent an additional element of uncertainty to the market. The coal industry in the Middle West, practically as a unit, very much regret Dr. Garfield's resignation, as he has won the entire confidence and well wishes of the coal-producing industry as represented by the operators of Illinois and Indiana.

CHICAGO

No demand for either steam or domestic. Removal of zone restrictions not favored by Mid West operators.

There is practically no demand in the city for steam coal, and no demand whatsoever for domestic coal. The Fuel Administration a short time back published a statement to the effect that they were considering abolishing all zone and price restrictions, to become effective Dec. 15. If such a step is taken, it will seriously affect the retail dealers of Chicago as well as a number of operators producing the better grade Illinois and Indiana coals. The retail dealers will be hurt because it will mean they will be kept with a big stock of unsold Illinois and Indiana coals on hand that will be exceedingly difficult to move, and the operators will suffer because they will lose a tremendous tonnage in Chicago, which will revert once more to the higher grade Eastern coals.

Raymond E. Durham, the United States Fuel Administrator for Illinois, has written to Washington and requested that the present coal zones be maintained, at least until next spring. He has asked in addition that at least six or eight weeks' notice be given before the zones are abolished, in order to give the industry a chance to adjust itself to changed conditions.

MILWAUKEE

Unusually mild weather makes the coal market slow. Liberal receipts of anthracite during the closing days of lake navigation. Situation considered satisfactory.

The coal market is dull and lacks the nervous tension which has characterized it at this time of the year since war conditions brought about restrictions in movement and price. There seems to be a feeling that there will be coal enough on hand when the last vessel is docked to meet all wants during the coming winter. The hard coal supply will necessarily have to be supplemented by rail, but the docks are loaded with bituminous coal. Soft coal is not in brisk demand on account of the extremely mild weather and also because many consumers in the city and interior who formerly were sure of getting their supplies during the winter as needed, have safeguarded their interests by accumulating stock piles by rail during the summer. The dockmen are pressing their holdings on the market, but as yet prices have not been shaded.

The movement of coal by lake to this port, thus far in December has been very liberal as far as anthracite is concerned, and Fuel Administrator Fitzgerald holds that when the season closes Milwaukee will have received her full quota of hard coal. Within two weeks 160,000 tons of coal for Lake Superior and 140,000 tons for Lake Michigan have been shipped from lower lake ports. Two large cargoes of anthracite are still to arrive here. Some soft coal cargoes will probably be allowed to remain afloat until there is more room on the docks.

Thus far in December eleven cargoes of hard coal aggregating 87,817 tons have been received. During the same period 29,500 tons of bituminous coal have arrived. Lake receipts of anthracite will show a falling off for the season of approximately 140,000

tons, while bituminous coal will show a gain of about 400,000 tons. Receipts by carferry and by rail were both heavier than last year throughout most of the season.

Soft coal piles seem to develop spontaneous combustion to a greater extent than usual this year. In addition to smoldering fires in dock yards, the partial destruction of two school buildings is attributed to ignition of coal in the bins.

ST. LOUIS

The market continues inactive, with no demand for domestic or steam. Most unusually mild weather thus far and demoralized conditions have broken all precedents.

Continued mild weather keeps the local market in a most unsatisfactory condition. This is the first winter in nineteen years that has been so open and so mild. Anticipating weather somewhat on the order of a year ago, everybody stocked up with coal; and now, in many instances, there are days that fuel is really not essential for heating. Storage piles are catching fire, and this to some extent is forcing the use of this coal at once, but in other places the users are preferably burning their storage coal rather than buy on the market. This has a tendency to bring the prices down. The present figures, however, are as low as coal can be sold with profit, and in many instances it is a case of selling it at actual cost as far as Standard coal is concerned.

The amount of this coal moving into St. Louis at the present time is almost nothing for domestic and very little for steam. Fortunately the railroads came in the past week and bought considerable coal, and they as good as made their own price. This is helping conditions in the Standard field wonderfully, but how long it will continue is a question. Many mines are shutting down and work only one or two days a week, and those that are trying to work have unbilled coal every night.

There seems to be a little unrest among the miners. Their income is not as great as it used to be, and they figure that they ought to get a little more money out of the coal that is put on the market.

Conditions in the Mt. Olive field are somewhat better than those in the Standard field. The mines here seem to have better running time. Coal is moving north, with a fairly good railroad tonnage to help. Cars are plentiful and there is nothing in particular to worry the operators in this field, only, of course, that they have not got as much business as they would like to have. They have idle days on account of no orders.

In the Duquoin and Cartersville fields it is apparent that operators are catching up with their orders. Several mines now have unbilled coal at night, and were it not for railroad business in this field many mines would be idle on account of no business. Car supply has not been as good in the past week as heretofore, and the movement is slowing up a little. In general conditions are satisfactory. Prices are being pretty well maintained in this field, whereas they are breaking in the other fields. In the St. Louis market Standard 2-in. lump is going as low as \$1.75 to \$1.85 and \$1.90, the mine-run \$1.60 to \$1.65, and screenings about \$1.40. Six-inch lump is going from \$2 to \$2.25, depending upon the quality.

Mt. Olive coal can be bought as low as \$2.40 for the domestic sizes, and here and there is a break in the Cartersville price to \$2.40; but this is not general and was likely made on equipment that was restricted.

No Arkansas coals are coming in and there is no indication that anything from the east will come in for many months to come. There are about 80,000 tons of storage coal in the dealers' bins in St. Louis, and it is estimated that manufacturing plants here have 100,000 to 120,000 tons in reserve.

It is almost impossible to move local coke, and the fuel situation is not a satisfactory one from any viewpoint.

The Government maximum price here, with the exceptions above noted, is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump...	\$2.55@2.75	\$2.55@2.75	\$2.40@2.70
3x6-in. egg...	2.55@2.75	2.55@2.75	2.40@2.70
2x3-in. nut...	2.55@2.75	2.55@2.75	2.40@2.70
Washed:			
No. 1.....	3.05@3.20	3.05@3.20
No. 2.....	3.05@3.20	3.05@3.20
No. 3.....	3.05@3.20	3.05@3.20
Mine Run...	2.35@2.50	2.35@2.50	2.20@2.30
Screenings...	2.17@2.32	2.17@1.32	1.50@1.60

Special preparation on Cartersville is 10 cents extra. Williamson & Franklin Co. rate is \$1.10. Other fields 95 cents.